This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

THE STARRY HOSTS.

THE STARRY HOSTS:

A PLEA FOR THE

HABITATION OF THE PLANETS.

BY

JOSEPH HAMILTON.

"These, then, though unbeheld in deepest night,
Shine not in vain. Nor think though men were none,
That heaven would want spectators, God want praise."
—*Milton.*

LONDON: SIMPKIN, MARSHALL, & CO.; EDINBURGH: ANDREW ELLIOTT.
BELFAST: W. MULLAN.

1875.

184. e. 55.

TO THE

REV. RICHARD SMYTH, D.D., M.P.,

PROFESSOR OF THEOLOGY,

MAGEE COLLEGE, LONDONDERRY,

THIS TREATISE

IS,

WITH THE GREATEST RESPECT AND ESTEEM,

DEDICATED

BY

THE AUTHOR.

INDEX.

CHAPTER I.

Introduction—The Question Stated—The Two Revelations—Science a Handmaid to Religion—Natural Religion of Bible Saints, and of the Heavenly Inhabitants, ... 9—19

CHAPTER II.

Bearing of Natural Religion upon the Present Question—Channels of Information—Evidence of the Senses, of Testimony, of Revelation—Heaven a Place—Its Locality not Discoverable—The Bible Silent as to Planetary Habitation—Mosaic Account of Creation not Contradictory, ... 20—30

CHAPTER III.

Evidence of Reason—Mathematical Demonstration not Attainable nor Necessary—Moral Certainty—Its Relation to Human Affairs—Examples—Two Pillars of Truth—The Argument Stated in Four Propositions, ... 31—38

CHAPTER IV.

First Proposition—Wisdom Exhibited in Creation—Examples—The same Wisdom must equally characterise what we cannot understand in Creation—Remotest parts of Nature subject to the same Law—Analogy confirmed by Scripture, ... 39—44

CHAPTER V.

Second Proposition—Human Wisdom Governed by Laws—Law of Right—Law of Expediency—Divine Wisdom the same in kind—Economy of Power—Examples from the Natural World, the Moral World, and Christ's Life on Earth—Effect and Extent of this Principle, ... 45—52

CHAPTER VI.

Third Proposition—Principle of Economy of Power applied to the Heavenly Bodies—Sketch of the Solar System—A Mad Architect—Folly of supposing the Planets to be merely Lights for our World—They must serve some worthier purpose on account of their Magnitudes, Distances, Magnificence, Opacity, and Positions—This Doctrine confirmed by a Reduced View of the Solar System, ... 53—66

CHAPTER VII.

Third Proposition continued—The Comets—Fixed Stars—Immensity of Creation—Comparative Smallness of the Earth—Inevitable Conclusion, ... 67—77

CHAPTER VIII.

Fourth Proposition—Planetary Habitation most worthy of God —Argument based on the Divine Goodness—Object of Universal Worship—Planetary Habitation most in harmony with His Revealed Operations—Analogies derived from the Immense—Analogies of the Minute—Animalcules, ... 78—93

CHAPTER IX.

Summary, ... 94—96

CHAPTER X.

Objections—Their Force—Silence of Revelation—Apparent Desolation of the Moon—Supposed Temperature of the Planets—Journeyings of Celestial Messengers—Doctrine of a Particular Providence—Supposed Inconsistency in the Scheme of Redemption, ... .97—107

CHAPTER XI.

Practical Inferences—The Doctrine of a Plurality of Worlds ought to be firmly Believed—It illustrates in the highest conceivable degree the Divine Greatness, Goodness, Mercy—Present and ultimate Safety of the Redeemed—Their Future Dignity and Blessedness—Atomic Theory, ...108—114

PREFACE.

THE subject treated in the following pages is of universal interest; but the difficulty is, to present it so as to be intelligently apprehended by all classes of readers. For the sake of those to whom such a subject is comparatively novel, it is necessary to be somewhat diffuse and exhaustive; while others of advanced thought and information, impatient of platitudes, will reasonably expect some new ideas in keeping with the advanced character of the subject.

I have endeavoured in some degree to meet the necessities of both these classes; and wherein I have failed, I can only ask the ill-informed and well-informed to forbear with me, and with each other. If any of the views I have propounded should appear to some to be too theoretic or visionary, it must be observed that such views are in many cases introduced merely as suppositions, for the sake of illustrations. Besides, I would claim for all such ideas that they be further examined; for many things that at first startle by their novelty, come to appear reasonable upon acquaintance. So far from being startled by anything here advanced, there are some who may consider me even tedious; but these can afford to exercise their patience for the sake of those of slower apprehension. It is

thus I would wish to see inexperience and judgment go hand in hand, in prosecuting the path of knowledge.

It is certainly desirable that faith and philosophy should be united in a closer and happier alliance than has yet obtained between them; and I would be glad if any feeble effort of mine should contribute in the least degree to that object. My aim in this work has been to exalt and enlarge our conceptions of the great First Cause, through a contemplation of His works; and more especially, by demonstrating the Habitation of the other Planets, to magnify the Grace that stooped for the recovery and salvation of ours. I know I have failed to expound these great realities in the way they deserve; but their importance may perhaps justify the attempt.

November, 1874.

THE STARRY HOSTS.

CHAPTER I.

Introduction—The Question Stated—The Two Revelations—Science a Handmaid to Religion—Natural Religion of Bible Saints and of the Heavenly Inhabitants.

It sometimes happens that much vexed questions actually become more enveloped in obscurity by the shadows of the arguments that are intended to enlighten them. The human mind is not capable of receiving and weighing with exactness more than a certain definite amount of evidence; and if taxed beyond its legitimate powers, instead of drawing a more just conclusion, it only becomes more confused and perplexed. In such a case, and when the question admits of it, the bewildered student experiences an instantaneous and wholesome relief when, by a vigorous stroke of his will, he dispels the phantasies of philosophy or of rhetoric that have surrounded him, and returning to the question with all the freshness of an unprejudiced and impartial understanding, judges it simply and solely on its own intrinsic merits.

A due appreciation of these principles will explain what I wish to state—that in arranging my thoughts on the subject before us, I have avoided as much as possible coming in contact with what others may have said or written upon it before me. The remarks, therefore, that I have to offer do not profess to be a compendium of all that can be advanced upon the

subject; but I have hoped that such a defect may be balanced by my own observations and conclusions possessing a greater impartiality and naturalness. For it is but a specious weight that attaches to the reiteration of an argument—it is the coincidence of independent thought that is invested with solid importance.

While I have thought fit to take the course stated, I hope I have not done so with any pedantic notion of my ability to treat the subject as it deserves. On the contrary, its greatness but serves to remind me of my own insufficiency and littleness. It is only when we get beneath the surface of such a subject, and begin to see its heights and depths, that we become truly convinced that "if any man think that he knoweth anything, he knoweth nothing yet as he ought to know."

We are here brought into contact with the vast and sublime in nature, and made to feel how little by comparison are ourselves and our belongings. The peasant who for the first time sees the pomp and circumstance of royalty, is struck as he never was before with a sense of his own littleness and obscurity. And I think that man must have an ill-tutored mind—or, more likely, an ill-tutored heart—who can expatiate in the wonders that astronomy unfolds, without being impressed with the insignificance of all that is terrestrial and human. Such was not the effect experienced by the Psalmist when he surveyed the wonders of the heavens. Whether he contemplated the starry orbs as an ordinary observer, or whether inspiration enlarged his prospect as science has enlarged ours, the effect produced on his mind was not more pious than it was philosophical. "When I consider thy heavens," said he, "the work of thy fingers, the moon and the stars which thou hast ordained, what is man that thou art mindful of him, or the son of man that thou visitest him?"*

The object of the following pages is to furnish some evidence in favour of the planets being the abodes of

*Ps. viii.

intelligent beings. I have no doubt that some to whom such an inquiry is new, will consider that we have no right to prosecute it at all, believing that we have no evidence either for or against the theory. There is a line of demarcation between the region of conjecture and that of philosophy; and I hope that as we proceed, the inquiry before us will be found to belong to the latter field. On the other hand, there are those who *have* thought upon this or kindred subjects, and who may consider me tedious in making such matters plain to the less informed. The difficulty is, to hit the happy medium, and while making the subject as simple and easy as possible for the one class, at the same time furnish some advanced thoughts for the other. Under the circumstances, I feel that I need the patience and charity of both.

Now, let us endeavour to state the question in its simplicity, divesting it of all surroundings that do not properly belong to it. The question is—Is ours the only inhabited planet? or what warrant have we to believe that any or all of the other planets are the scenes of sentient and intelligent habitation? Those twinkling orbs that sparkle on the brow of night—are they merely a part of the gorgeous garniture of this world, or do they sustain more important and closer relations to other scenes of life and enjoyment?

Our position is, that so far from the earth being the only inhabited globe, we have the strongest reasons for believing that all the planets of this and other systems are also inhabited.

It is right to say here, that this inquiry concerns the planets only. I am not going on forbidden ground when I assume that the fixed stars are centres of other systems, as our sun is the centre of the solar system. Now, it is not of those suns, but of the planets that surround them, that our argument treats. I am far from thinking that our sun—or any other sun—is merely a prodigious mass of barren effulgence; but we

have not so direct evidence for believing such bodies to be inhabited as will apply to the planets, and this inquiry is intended to refer only to the latter.

For the sake of exactness, too, another limitation may be made. When we speak of the planets being inhabited, we do not mean that every one of them is necessarily so at the present moment. Some of them may be in a state of transition, as our earth was before Adam was created, and as it shall be again before that "new earth wherein dwelleth righteousness" shall rise out of the ashes of the old. But whether the other planets be subject to such transitions, and whether such periods be long or short, our position is the same—like the earth, the planets were "made to be inhabited."

Nor do we pretend to give the smallest hint as to the physical or moral constitution of any of the planetary inhabitants. We have no *data* that I know of for any opinion regarding their size, shape, appearance, employments, habits, or history. They may resemble ourselves in some of these respects, or they may differ as widely as angels differ from insects. With all this we have nothing to do, for it belongs entirely to the region of conjecture. The question is, Are the planets *inhabited?* and that inquiry, I think it will be seen, is strictly within the domain of philosophy.

There is one point of resemblance, however, between the planetary inhabitants and ourselves, that fairly comes within the scope of our remarks. We claim for those inhabitants that they are creatures of *intelligence.* Whether they are higher or lower than ourselves in the scale of being, we do not now enquire. Or whether there be a vast gradation of intelligences—perhaps as vast and as varied as the different spheres they inhabit —pertains not to the present subject. It will simply be my business to adduce what evidence I can in support of the doctrine that the planets are the scenes of sentient and intelligent activity.

I regret there are still so many who entertain

conscientious scruples against such subjects as we have now before us. I do in some degree respect such scruples, for I am sure they are often the indication of a reverence for the "secret things that belong unto the Lord." To the truly Christian mind nothing is more repugnant than a presumptuous flight into mysteries where "angels fear to tread." But as every virtue is said to have a counterfeit—and we are not ignorant of Satan's devices—I fear that this very reverence has often degenerated into superstition, and excluded the light both of reason and revelation. I think then I cannot do better, even at the risk of being tedious, than try to remove the prejudice referred to; for no amount of evidence will convince unless the mind be disposed to the reception of it.

It cannot be too constantly borne in mind, that God reveals Himself in His works as well as in His word. The pages of nature on which are written "the wonderful works of God" are as truly a communication from Himself as are the pages of Scripture, where holy men have spoken "as they were moved by the Holy Ghost." Of course, these two revelations are not equally important. Supreme and incomparable importance must for ever attach to that revelation which alone "points the way to heaven—to God." The light of nature cannot do this, but it can serve, and has often served, to interpret some of the difficulties of the higher revelation. I consider this the grandest use to which it can be applied, and in this capacity it is to be welcomed as a handmaid to religion.

But we are not to shrink from an appeal to nature, even when its teachings do not appear to illustrate any Bible doctrine, nor even when they appear to be subversive of Scripture truth. Nature and revelation *must* harmonise, for God is the author of both, and both must be true. When they *appear* to be contradictory, it is always because either one or other is not rightly interpreted. Certain discoveries in geology were once

thought to have overturned some of the most important utterances of the Bible. Many serious Christians were greatly alarmed in consequence, and feared lest further discoveries should unsettle altogether their cherished faith in Scripture testimony. But nature was misinterpreted; science had delivered but half her message; further discovery, instead of shaking the Bible doctrines, established them as firmly as the everlasting hills.

Let science then, like patience, have her perfect work, and revelation need not fear. And when a study of nature casts any light at all upon our path, let us thankfully walk in its cheering beams, waiting for that full light and perfect day when, in nature as in grace, we shall "see as we are seen, and know even as we are known."

If anything further were wanting to stimulate a study of the works of creation, it might be found in the Bible itself. The Author of nature has there directly invited us to a contemplation of His excellencies, as they are reflected in His works. "Thus saith the Lord, thy Redeemer, and He that formed thee from the womb, I am the Lord that maketh all things; that stretcheth forth the heavens alone; that spreadeth abroad the earth by myself."* "Lift up your eyes on high, and behold who hath created these things, that bringeth out their host by number; He calleth them all by names, by the greatness of His might, for that He is strong in power; not one faileth. Hast thou not known, hast thou not heard, that the everlasting God, the Lord, the Creator of the ends of the earth, fainteth not, neither is weary? there is no searching of His understanding."†

In conformity with such invitations was the practice of the most eminent of the Bible saints. Jeremiah celebrates the greatness and wisdom of the Creator, as manifested in His works. "He hath made the earth by His power, He hath established the world by His wisdom, and hath stretched out the heavens by His

* Isa. xliv., 24. † Isa. xl., 26 and 28.

discretion. When He uttereth His voice, there is a multitude of waters in the heavens, and He causeth the vapours to ascend from the ends of the earth; He maketh lightings with rain, and bringeth forth the wind out of His treasures."* Job learned a lesson of humility from a consideration of God's might in controlling the forces of nature. "He is wise in heart, and mighty in strength: who hath hardened himself against Him, and hath prospered? Which removeth the mountains, and they know not; which overturneth them in His anger; which shaketh the earth out of her place, and the pillars thereof tremble; which commandeth the sun, and it riseth not, and sealeth up the stars; which alone spreadeth out the heavens, and treadeth upon the waves of the sea; which maketh Arcturus, Orion, and Pleiades, and the chambers of the south; which doeth great things past finding out; yea, and wonders without number."†

But it was David especially who appears to have revelled in his intercourse with nature, and was most happy in deducing the lessons which she taught. Here he learned God's *property in the universe.* "The heavens are Thine, the earth also is Thine; as for the world, and the fulness thereof, Thou hast founded them."‡ Here, too, he was led to think of God's *eternity.* "Before the mountains were brought forth, or ever Thou hadst formed the earth and the world, even from everlasting to everlasting, Thou art God."§ "Of old Thou hast laid the foundation of the earth; and the heavens are the work of Thy hands. They shall perish, but Thou shalt endure; yea, all of them shall wax old like a garment; as a vesture shalt Thou change them, and they shall be changed; but Thou art the same, and Thy years shall have no end."¶ It was here also that David contemplated, and was enabled to rejoice in the *divine sovereignty.* "Whatsoever the Lord pleaseth, that did He in heaven, and in earth, in the seas, and all deep places. Who smote the first-born of

* Jer. x., 12. † Job ix., 4. ‡ Ps. lxxxix., 11. § Ps. xc., 2. ¶ Ps. cii., 25.

Egypt, both of man and beast. Who smote great nations, and slew great kings."* And it was here the Psalmist learned the doctrine of God's *omniscience.* "Understand, ye brutish among the people; and ye fools, when will ye be wise? He that planted the ear, shall He not hear? He that formed the eye, shall He not see?"† David was also taught to believe and rejoice in the doctrine of a *particular providence,* from considering the wonders of his own physical frame. "I will praise Thee; for I am fearfully and wonderfully made; marvellous are Thy works; and that my soul knoweth right well. My substance was not hid from Thee, when I was made in secret, and curiously wrought in the lowest parts of the earth. How precious also are thy thoughts unto me, O God! how great is the sum of them! If I should count them, they are more in number than the sand; when I awake, I am still with Thee."‡

The *power* and *wisdom* of the Creator, as evidenced in His works, were with the Psalmist a frequent theme of praise. "Great is the Lord, and greatly to be praised; and His greatness is unsearchable. One generation shall praise Thy works to another, and shall declare Thy mighty acts. I will speak of the glorious honour of Thy Majesty, and of Thy wonderous works."‖ "Let us come before His presence with thanksgiving, and make a joyful noise unto Him with psalms. For the Lord is a great God, and a great King above all gods. In His hand are the deep places of the earth; the strength of the hills is His also. The sea is His, and He made it; and His hands formed the dry land."§ Again, "The Lord is great, and greatly to be praised; He is to be feared above all gods. For all the gods of the nations are idols; but the Lord made the heavens. Honour and majesty are before Him; strength and beauty are in His sanctuary."¶ Again, "The heavens declare the glory of God; and the firmament sheweth

* Ps. cxxxv., 6. † Ps. xciv, 8. ‡ Ps. cxxxix., 14. ‖ Ps. cxlv., 3.
§ Ps. xcv. 2. ¶ Ps. xcvi., 4.

His handy-work. Day unto day uttereth speech, and night unto night sheweth knowledge. There is no speech nor language where their voice is not heard."*

We have seen that it was a contemplation of the starry heavens that taught the Psalmist to be humble. "When I consider Thy heavens, the work of Thy fingers, the moon and the stars which Thou hast ordained, what is man that Thou are mindful of him, and the son of man, that thou visitest him?"† But this very prospect, which almost overwhelmed the Psalmist with a sense of his own insignificance, at the same time suggested an unbounded confidence in a Being so great and glorious. Here is the contrast, and its lesson. "Put not your trust in princes, nor in the son of man, in whom there is no help. His breath goeth forth, he returneth to his earth; in that very day his thoughts perish. Happy is he that hath the God of Jacob for his help, whose hope is in the Lord his God; which made heaven and earth, the sea, and all that therein is; which keepeth truth for ever."‡

And in the psalm immediately following, it is worthy of notice how intimately associated are two actions which we might otherwise think very far apart —telling the number of the stars—and binding up the wounds of the broken-hearted. "He healeth the broken in heart, and bindeth up their wounds. He telleth the number of the stars; He calleth them all by their names. Great is our Lord, and of great power; His understanding is infinite."‖ Hence David could exult in the safety afforded by the care of omnipotence. "I will lift up mine eyes unto the hills, from whence cometh my help. My help cometh from the Lord, which made heaven and earth. The Lord shall preserve thee from all evil; He shall preserve thy soul." And when the Psalmist was tempted to despond, it was a consideration of God's mighty works that revived his hope. "Will the Lord cast off for ever? and will He be favourable no more? Is His mercy clean gone

* Ps. xix., 1. † Ps. viii., 3. ‡ Ps. cxlvi., 3. ‖ Ps. cxlvii., 2. § Ps. cxxi., 1.

for ever? doth His promise fail for evermore? Hath God forgotten to be gracious? hath He in anger shut up His tender mercies? And I said, This is my infirmity: but I will remember the years of the right hand of the most High. I will remember the works of the Lord; surely I will remember Thy wonders of old."*

Such, then, was the *natural religion* of the most eminent saints of old. With such illustrious examples before us, it surely is not becoming to decry the teachings of nature, as has been too much the fashion. It is safe and right to tread in the footsteps of David, and Job, and Isaiah; and so become "followers of them who through faith and patience, now inherit the promises."

Even in that perfect state where we shall see no longer "through a glass darkly," but "face to face," *natural religion*, properly so called, will not be obsolete or useless. Even there, perhaps, God can be contemplated only through the medium of His works. In the book of Revelation, the redeemed are represented as praising God in this song, "Thou art worthy, O Lord, to receive glory and honour and power; for Thou hast created all things, and for Thy pleasure they are and were created." This language evidently implies that the material works of creation are the objects of contemplation and admiration with the heavenly inhabitants. Here their conceptions are continually enlarging, and their adoration is kindled afresh.

Elsewhere the heavenly hosts are represented with harps in their hands, celebrating the divine praises in these words, "Great and marvellous are Thy works, Lord God Almighty; just and true are Thy ways, thou King of saints." The "works" here referred to may justly be supposed to relate to the material universe, while the "ways" of God no doubt refer to His moral administration. And it is no cursory or superficial examination of these "works" and "ways"

* Ps. lxxvii., 7.

that furnishes the celestial inhabitants with this song of praise. In the one case, they have obtained such an extensive view of creation as compels them to exclaim that God's works are "great and marvellous;" in the other, they have acquired such an intimate appreciation of His moral government that they perceive His ways to be "just and true." We find then that *creation* and *providence* supply the redeemed with subjects of never tiring interest, and songs of never ending praise.

Whether, therefore, we would imitate the example of the great and good who have gone before us, or whether we would wish to be assimilated in employment to those who have entered on a state of purity and perfection, we ought to contemplate the "wonderful works of God;" and that not merely cursorily, but so far as true science or philosophy can lead us. The arcana of nature is not profane, but holy ground, for the light that shines there is a reflection of that eternal and perfect Light in which there is "no darkness at all." "Come then and see the works of God." "One generation shall praise Thy works to another, and shall declare Thy mighty acts. I will speak of the glorious honour of Thy Majesty, and of Thy wondrous works."

CHAPTER II.

Bearing of Natural Religion upon the present Question—Channels of Information—Evidence of the Senses, of Testimony, of Revelation—Heaven a Place—Its Locality not Discoverable—Silence of Scripture as to Planetary Habitation—Mosaic Account of Creation not Contradictory.

A STUDY of the works of creation, as just now recommended, may appear to some not to bear very directly upon the question before us. That question deals with certain parts of creation very far removed from us, and that offer but unpromising fields for direct investigation or discovery. Only a few of the planets are near enough to be visible to the naked eye; and these appear but as lucid specks, twinkling on the brow of night. A greater number come within the range of the telescope; but even this aid to vision makes us acquainted with but a few of their leading characteristics. Where we know so little, then, what hope can we have of proving so much, namely, that the planets are the scenes of activity and intelligence?

I think it will be found, as we proceed, that evidence of this direct character is not at all necessary, as it certainly is not attainable. The evidence of *the senses* cannot have much place here. No man ever *saw* the inhabitants of another planet, or *heard* the "hum of its mighty population." But the evidence of the senses is not considered indispensable in regard to other doctrines which we hold with the utmost tenacity. Some who are not accustomed to reflect may be ready to suppose that it is through the medium of sight and hearing that we acquire "all we believe, and almost all we know." The fact is, that the evidence upon which we form conclusions in the daily concerns of life, is exactly of the same class with that which I would adduce to prove the habitation of other worlds.

To make this point clearer, let us enquire what are the channels through which our information on all subjects is derived. I suppose these might be reduced to *four* classes. We have first *the bodily senses;* then there is *testimony*; in the next place we have *revelation;* and lastly, there is *reason.* To these possibly *intuition* should be added; but I am not sure that what would be understood by that term might not be attributable in some cases to the *senses,* and in others to a rapid exercise of *reason,* or possibly to the motion of an unseen Spirit, which would properly come under the head of *revelation.*

Now through which of the four mediums I have mentioned, are we to look for evidence bearing upon the doctrine of a plurality of words? Let us try them separately. We have seen that *the senses* furnish very meagre evidence indeed. Beyond the fact that some of the planets can be descried, their orbits traced, their sizes, motions and distances approximately calculated, actual discovery, as the result of observation, can little further go. I have just read, indeed, in this day's newspapers,* that a new invention has been made in the telescope by which the moon is brought within thirty miles of us; and the inventor professes to have seen animals "as large as fleas on a blanket" travelling over the lunar mountains. I let this pass until it is better authenticated. But it may be remarked that if the moon's inhabitants could actually be seen, that would be only one step towards the proof of the habitation of other spheres. We shall take less dubious ground in assuming that the demonstration required is beyond the range of our bodily organs.

Then what saith *testimony*? It is reverently silent. In ordinary matters we depend much on credible witnesses; but on this subject none of our own race can tender any evidence, and we are debarred from the society of all higher intelligences who might instruct us.

* June 9, 1874.

We have therefore to enquire, in the next place, if *revelation* have thrown any light upon the matter. I am taking it for granted that the authority of scripture is paramount. The "thrones and dominions, principalities and powers" there referred to, have, I believe, been differently understood, some supposing that other *intelligences* are spoken of, while others consider that the reference is to other *worlds*. Whichever sense is taken, the idea is generally favourable to the doctrine of planetary habitation. As the passage, however, is admittedly obscure, I would only lay this general stress upon it.

But the Bible does speak, and that in no equivocal terms, of two places of habitation, besides our earth. We read of heaven, the abode of the righteous; and of hell, the abode of the wicked. That these are really *places*, and not merely *states* is generally allowed, and need not here be proved at length. To go no further, it must, I think, be taken as conclusive that heaven is a place from the fact that the glorified body of Christ ascended to it, and there remains till His second coming. Two of the Old Testament saints were taken up bodily into Paradise, and so I believe were those who rose from their graves at the time of our Lord's crucifixion. Whether these bodies are very much rarified or spiritualized, they are still *corporeal*, and *place* is necessary to their existence.

The question then arises—In what part of the universe are those habitations of happiness and misery located? If it should appear that any of *the planets* are inhabited by the righteous or the wicked, that would be a partial solution of the question before us.

Various conjectures, more or less plausible, have been advanced as to the locality of heaven. Some have supposed it to be the centre of all centres of revolving spheres—the very centre of the universe; while others, to go to the opposite extreme, have imagined that the very spot we occupy is heaven, but that we cannot realise it till we burst the barriers of these fleshy tabernacles. I have said these are *con-*

jectures; that they are nothing better is evidenced, I think, by three important considerations.

In the first place, it is very little we can know of the extent and plan of the universe, taken as a whole. We are justly amazed at the wonders the telescope has unfolded; yet it is likely that man has hardly seen beyond the very portals of creation. To speculate, then, as to the locality where the Infinite and Eternal Majesty holds court, is surely beyond our province. As well might the little insect, whose experience is limited to a few inches of earth, speculate as to what part of our globe contains the City of London.

In the next place, we are as ignorant of the moral government of God as we are of His material creation. We understand something of that government in its relation to our own race; but we have no idea whatever as to how it affects the inhabitants of other spheres. As our earth is but an insignificant province of creation, the denizens of earth may be proportionately insignificant. The exhibitions of the divine character, then, that are vouchsafed to other worlds, may be on a grander scale altogether than those of which we have any conception.

We are apt to think—and I am sure with truth—that the plan of salvation for the recovery of our lost world, is that transaction in which above all others the glory of the Deity is made great. But who will venture to affirm that this transaction is of local importance only? May it not have relation to other worlds as well as ours? Those worlds may or may not be in the lapsed condition of our own, and the benefit of the atonement may or may not be vouchsafed to them in the same form or degree. But certainly it is not unreasonable to believe that that great transaction, which probably stands alone in the history of eternity, may have reference in some way or other to all worlds, and in some of them may shine with a splendour far surpassing even that which has so gilded the hopes and prospects of the human race.

Such an idea has been entertained by some of the most learned and pious men, among whom might be mentioned Chalmers, Cuming, and many others. But while the general idea is admissible and reasonable, some, as I think, have gone rather far in regard to detail. One, for instance, has supposed that the body in which our Saviour suffered here was but one of many that He possessed; and that He suffered in different bodies in different worlds at the same time. Another has imagined that the scene enacted on Calvary has been or will be witnessed by other worlds successively, according to the distance that intervenes between us and them; and, considering how immensely distant some of those worlds are, he calculates that some of them may be witnessing the crucifixion at this very hour, while to others the scene may not be visible for ages to come. I do not myself venture upon any such conjectures, but I place these two in contrast, to illustrate the general idea advanced—that the scheme of redemption, which so intimately concerns ourselves, may also have the most important relations to other intelligences. Now if the divine government is conducted on such a transcendent scale as this, it is far, far above our comprehension. When we can understand but a little of that government as it affects ourselves, we are entirely lost in understanding its relations to other worlds. "Lo, these are parts of His ways, but how little a portion is heard of Him!" How futile, then, must be the attempt to decide upon the *locality* that heaven occupies in the material creation.

I have said there is a third consideration calculated to confirm this idea. We know very little, or nothing at all, of the nature of the *spiritual body*. "There is a natural body," says the Apostle, "and there is a spiritual body." The bodies of those now in Paradise, and of those who shall occupy it after the resurrection, may be so refined and spiritualized that the conditions of their existence may be as different as possible from those under which we live at present. The spiritual

body will certainly require *space* for its accommodation, but how much or how little we can have no idea. Tucker has a theory about the spiritual body being thousands of times smaller than a grain of wheat, yet possessing most wonderful powers, both physical and mental. The "many mansions," therefore, of which we read, may be tenanted by the righteous of all worlds, and yet occupy a very small space indeed. On the other hand, the whole creation may be but the congenial sphere in which ethereal intelligences shall move and act. Celestial harmonies may at this moment be vibrating through our midst, but in strains too delicate and refined to be detected by mortal ears. Celestial colors, too pure for mortal eyes, may be flung over all the regions of space, so that what we esteem to be vacuity may be filled with all that can delight the purer senses of the heavenly inhabitants. With such possibilities as these in view, it is vain to speculate as to the *place* that is occupied by the better world. Since we know so little of the conditions of the heavenly *existence,* we cannot know much of the heavenly *locality.*

Thus it will be seen what is the amount of scripture testimony on the subject of planetary habitation. We have no direct Bible authority for holding that any of the planets are inhabited, for we cannot define the locality of the two places of habitation of which the Bible speaks. They may be situated beyond the planets, for heaven is a "land that lieth very far off;" or they may be very near at hand, for the "kingdom of heaven is within you."

While we thus admit that revelation is silent upon the subject under consideration, there are not many, I think, who would construe that admission into an argument against the view we have espoused. The Bible is a message of love to our world, to teach us the way of recovery and reconciliation. It could not therefore be expected to give much account of the state of affairs in other parts of the creation, for that would be

a departure from the momentous topics that concern us so much more closely. "The object of this message," says Chalmers, "is not to convey information to us about the state of the planetary regions. This is not the matter with which it is fraught. It is a message from the throne of God to this rebellious province of of His dominions; and the purpose of it is, to reveal the fearful extent of our guilt and of our danger, and to lay before us the overtures of reconciliation. Were a similar message sent from the metropolis of a mighty empire to one of its remote and revolutionary districts, we should not look to it for much information about the state or economy of the intermediate provinces. This were a departure from the topic on hand—though still there may chance to be some incidental allusions to the extent and resources of the whole monarchy, to the existence of a similar spirit of rebellion in other quarters of the land, or to the general principle of loyalty by which it was pervaded. Some casual references of this kind may be inserted in such a proclamation, or they may not—and it is with this precise feeling of ambiguity that we open the record of that embassy which has been sent us from heaven, to see if we can gather anything there, about other places of the creation." Because, then, we find no reference to the inhabitants of other worlds, we are not to conclude that no such inhabitants exist. We are simply left without any light upon the subject, so far as scripture is concerned, just as we are left without light upon many other subjects.

But I have no doubt there are some who will *not* readily admit that the Bible is thus silent upon the habitation of the heavenly spheres. Some who have not reflected much on the matter may believe that the Mosaic account of the creation upsets our theory altogether. It is there recorded that "God made two great lights; the greater light to rule the day, and the lesser light to rule the night: He made the stars also. And God set them in the firmament of heaven to give light

upon the earth, and to rule over the day, and over the night, and to divide the light from the darkness."*

From this account it might appear at first sight that the heavenly bodies were made chiefly to give light to the earth. If that be so, our theory as to the habitation of the planets cannot be entertained. But the fact is, that no such stress can fairly be put upon the passage. It must be remembered that the Bible was given, "not," as Matthew Henry says, "to gratify our curiosity, and make us astronomers, but to lead us to God, and make us saints." It was therefore expressed, not in scientific, but in plain and easy language. If the popular phraseology had not been employed in writing the history of creation, that history could not have been understood in the early ages of the world, and in fact would have been rejected as contradictory to the evidence of the senses. If instead of hearing simply of "the stars," men had been told of planets and fixed stars, and of their sizes, distances, numbers, and relations to other systems, the account could neither have been believed nor understood. But the wisdom of the Spirit is manifested in giving an account of "the stars" that is equally true to the astronomer who scans the heavens through a telescope—and to the simple believer to whom the twinkling orbs appear nearly all alike.

In this, as in other matters, it was sufficient to describe things according to their apparent and recognised properties. Hence it is a common expression of scripture that the sun rose and set. Strictly he did neither, but the earth's revolution on her axis gives the sun the appearance of rising and setting. But if the event had been recorded in this scientific way, how absurd would have the announcement appeared, while as yet the earth's diurnal motion was undiscovered.

It was of great importance, moreover, that scripture should give due prominence to the relations that such things bear to ourselves specially. Hence we read that

*Gen. i. 16.

the sun and moon were made to give light to *the earth.* That is the important doctrine to us who inhabit the earth; but it is now quite as certain that the sun gives light to other planets also. Revelation has not stated that fact, nor has it stated that the earth herself gives thirteen times more light to the moon than the moon gives to the earth. These things concern us but remotely, therefore they have not been mentioned. They are undoubted facts nevertheless; and to state them is only to enunciate the plainest truths of astronomy, and in no way to impugn the testimony of revelation.

A cursory reading of the Mosaic account of the creation may lead also to another misconception, inimical to the doctrine of a plurality of worlds. It may appear to some that the sun, moon and stars—planets and fixed stars alike—were actually *made* upon the fourth day. If that be really taught, it would go far to show that the chief use of the heavenly bodies referred to our earth, and that therefore they could not be supposed to be inhabited.

But it is not expressly stated that the sun, moon, and stars, were created on the fourth day. It is rather to be inferred, I think, that their relation to the earth was inagurated or appointed at that time. For anything the Bible states to the contrary, the other planets of our system, as also the sun and the fixed stars, may have existed ages before our earth received its present constitution. The most eminent theologians and men of science have believed that such was the case. Some, indeed, believe that the whole of the solar system was created at the same period as the earth. "It is very likely," says Dr. A. Clarke, "the whole of the solar system was created in six days." So far as I can understand the relations of one part of our system to all the rest, and in view of some important changes that appear to have occurred at various times in the solar system, I think it more likely that the earth

and moon only were created or appointed at that time.

However that may be, it is generally agreed that the great bulk of the creation existed before our earth received its present dispensation; and revelation has not stated the contrary. "Moses," says Dr. Buckland, "does not deny the existence of another order of things prior to the preparation of this globe for the reception of the human race, to which he confines the details of his history; there is nothing in the proposition inconsistent with the Mosaic declaration of the creation."

"Modern science," says Eadie, "has fully proved that light exists independently of the sun, and must have been itself an original creation. Nay more, the the fourth verse does not speak of the creation of the heavenly bodies, but only of their being constituted luminaries. The relation of sun, moon and stars, as light bearers to the earth, was established on the fourth day. It appears, in fine, to be an unwarranted use of the first chapter of Genesis, to press it into accordance with any scientific system. It was a simple lesson to the old world of God's creative power, and gave them a popular outline, not a scientific analysis.*

"We read," says Cuming, "that God made two great lights; but the literal translation is, He made two great *light bearers.* The sun and the moon may have existed millions of years before this. What God did upon the fourth day was to consolidate the scattered rays of light in that body called the sun, and to make him to be the great and glorious luminary to light the world that rolls around him, and on which we dwell. So that the language of Moses, we observe, is the language of the Newtonian philosopher when he says, not that the sun and moon were created at that time, but that they were then made to sustain a relationship to the world which they had not sustained before, that of lighting it by their rays."†

It will thus appear—not to multiply authorities—

* Cyclopedia. † Christian Evidences.

that the Bible account of creation is not subversive of the doctrine of a plurality of worlds. It will be our business later on to show that it would be inconsistent with the Divine wisdom to have created all the heavenly bodies for the mere accommodation of our earth. But that would be of no avail if we did not first clear the ground by demonstrating that such a view is in harmony with revelation. We take it, in fact, that scripture is silent upon the subject, and has left us to follow the teachings of science or philosophy, if we want further information.

CHAPTER III.

Evidence of Reason—Mathematical Demonstration not attainable nor necessary—Moral Certainty—Its relation to human affairs—Examples—Two Pillars of Truth—The Argument stated in Four Propositions.

WE come then to enquire, in the next place, if the deductions of *reason* will warrant the opinion that other spheres besides our own are the scenes of intelligence and activity. We have seen that the bodily *senses* go but a short way in this enquiry; we have seen that direct *testimony* is altogether silent; we have seen that *revelation* has no deliverance upon the subject; and now what saith *reason?*

Reason is that rational faculty by which, from things that are known, we deduce the knowledge of things previously unknown. There must first be a certain amount of knowledge for a foundation, before we can rear a superstructure of legitimate inference. In other words, we must have *premises*, to warrant us in forming *conclusions*. If the premises be unsound, or unfairly used, wrong conclusions will be arrived at. But if the premises be *true*, and the reasoning *sound*, the conclusion is beyond the possibility of mistake. For instance; things that equal to the same thing are equal to each other. If the premises here be certain, that is, that the things spoken of are equal to something else, the conclusion that they are equal to each other is absolutely unimpeachable. Again; the angles at the base of an isosceles triangle are equal to one another. There are several steps in this argument, and many appeals to facts previously established; but if there were ten thousand more, and all equally trustworthy, the conclusion would be as certain as any fact in the science of earth or heaven.

Now this is mathematical demonstration; and it is absolutely perfect, so far as it goes. It is plain, however, that this sort of proof is not applicable to many of the

common affairs of life. The opinions we hold on most matters are derived in quite a different way; they may be quite true, but their truth cannot be demonstrated to a mathematical certainty. Some one has said that absolute certainty was not made for man. Certainly, I take it as an evidence of our imperfection that we have to deal with probability at all; and the little of absolute certainty that is attainable, I take as an earnest of that better state where not even the highest degree of probability can have place. "When that which is perfect is come, then that which is in part shall be done away."

Under present circumstances, however, we are satisfied if our opinions, even on the highest subjects, have the weight of *moral* certainty. This sort of certainty admits of the possibility, but not the probability, of mistake. And in our case, reasoning on moral grounds has a twofold advantage over mathematical reasoning; it is of more general and practical application, and it can be employed by all sorts and grades of intellect. Considerable clearness and strength of mind are required in mathematical reasoning; and the least flaw in the reasoning may lead to the most false conclusions. But in moral reasoning, we take broader ground, and instead of drawing conclusions that are *necessarily* true, we cannot arrive at more than a *very high degree of probability*, which, however, to all intents and purposes, means *certainty*.

"Probable evidence," says Bishop Butler, "is essentially distinguished from demonstrative by this, that it admits of degrees, and of all variety of them, from the highest moral certainty to the very lowest presumption. We cannot indeed say a thing is probably true upon one very slight presumption for it; because, as there may be probabilities on both sides of a question, there may be some against it; and though there be not, yet a slight presumption does not beget that degree of conviction, which is implied in saying a thing is probably true. But that the slightest possible

presumption is of the nature of a probability, appears from hence, that such low presumption, often repeated, will amount even to moral certainty. Thus, a man's having observed the ebb and flow of the tide to-day, affords some sort of presumption, though the lowest imaginable, that it may happen again to-morrow; but the observation of this event for so many days, and months, and ages together, as it has been observed by mankind, gives us a full assurance that it will.

"Probable evidence, in its very nature, affords but an imperfect kind of information, and is to be considered as relative only to beings of limited capacities. For nothing which is the possible object of knowledge, whether past, present, or future, can be probable to an infinite Intelligence; since it cannot but be discerned absolutely as it is in itself, certainly true, or certainly false. But to us, probability is the very guide of life.

"From these things it follows, that in questions of difficulty, or such as are thought so, where more satisfactory evidence cannot be had, or is not seen, if the result of examination be, that there appears, upon the whole, any the lowest presumption on one side, and none on the other, or a greater presumption on one side, though in the lowest degree greater, this determines the question, even in matters of speculation."*

I have introduced these observations to show how much stress is to be laid upon moral demonstration. And I may be pardoned for giving one or two examples to show that many things in which we believe as firmly as we do in our own existence, are not susceptible of any higher degree of proof.

The ebbing of the tide, already referred to, will illustrate the case in point. We reason that the tide will flow to-morrow, because it has flowed regularly every day for nearly six thousand years. There is no absolute certainty here; yet the man who would doubt the flowing of the tide to-morrow would justly be regarded as insane. That the tide flowed to-day would

* Analogy.

constitute an argument that it would flow to-morrow; but it would be an argument of the very weakest kind. It would gather strength, however, if the tide had flowed for seven days successively; it would become much stronger if the tide had flowed seven years; and it would increase in power just in proportion to the number of times the event had been repeated.

No one, again, doubts that the sun will rise to-morrow. We are all making arrangements for that event, as if it could not be otherwise. But there can be no certainty of the kind. We know the sun has risen very punctually for a long time; we believe, therefore, he will rise to-morrow with his accustomed punctuality; and that is all we know about the matter. We are justified, nevertheless, in expecting the event with the utmost assurance. Mathematical certainty is impossible; but moral certainty is available, and it is sufficient.

These are two illustrations of the fact that what is not capable of absolute proof, is yet received with the most entire assent of the understanding, and acted upon as if uncertainty were out of the question. And yet, curiously enough, these very illustrations serve also to show the fallibility of our most reasonable deductions. For the sun will one day go down, not to rise again; the tides also will one day cease to flow. The probability is daily gathering strength that the sun *will* rise, and that the tide *will* flow; yet every day is bringing us nearer to events that will disprove these conclusions. On the very last day that the earth will revolve in her usual course, there will be a greater human probability than on any former day in the world's history, that the circumstances we speak of will again be repeated; and yet on that very day they shall have happened for the last time.* Such is the imperfection of our knowledge, in this imperfect state.

*I do not mean to say that the sun, or even the moon, will lose anything of their place and power at the period of the earth's conflagration; but that great local catastrophe will so distort and obscure their effects in regard to the things referred to, that they may be popularly

This consideration is well calculated to humble our pride of mind, but certainly it ought not to suspend our powers of judging of probabilities, or of drawing conclusions from them. It would be the blindest fatalism to draw *no* conclusions, because the most probable are open to a possibility of mistake. I say a possibility, for it is no more. And I think the way to test that is, to consider what proportion of our conclusions, based upon probabilities, turn out to be correct, as compared with those the event proves to be wrong. The proportion, I believe, would be something like a mountain to a grain of sand. Even the case we have supposed—that of the probable rising of the sun—is not so adverse to this view as might at first sight appear. For if all the inhabitants of the world, on the last day of her existence, should infer that the sun would rise as usual next morning, and find that inference *wrong*—consider how often before they were *right* on the same matter; consider also how many millions of millions before them drew a like conclusion, which the event always justified. And how many thousands of incidents, unobserved at the time, crowd into the daily experience of every one of us, calling forth our constant, but almost unconscious action on the evidence of probability alone, and demonstrating that to be indeed the "very guide of life." And if the result on a rare occasion is not exactly as we expected, we do not lose faith in the laws of probability, any more than we cease to take food, when we hear that a person has been poisoned.

Now it is in accordance with these laws of proba-

spoken of as having ceased. If such things as the rising of the sun and the flowing of the tide are to be perpetuated upon the "new earth," the same means of accomplishing them will, I believe, still be in existence. For it cannot be supposed that the "new heavens" that are promised will involve a new creation of the whole universe. A few simple changes in the earth's own position and circumstances may give our world's inhabitants a new celestial scenery, far surpassing anything that can now be conceived, and such as could only be described as "new heavens."

bility that I would hope to establish the doctrine of planetary habitation. I make no apology for occupying so much time in trying to expound and illustrate these laws; the apology is rather required for doing the work so imperfectly. I have often been struck with the want of a correct habit of thinking on the part of men of acknowledged capacity in other matters. Emphatic and authoritative assertion is too often preferred to patient and painstaking investigation. I would like, therefore, to familiarise the mind with the terms on which we reason on the most common subjects, for the subject before us must be treated very much in the same way. We conclude that food will strengthen us, because it has always done so; in the same way, we expect that grass will always be green; that fire will burn; that vapours will ascend; that men will die. These are the simplest inferences of analogy. The same principle, a little extended, enables us to judge of men's characters and actions. Because a man has done very many virtuous deeds, we conclude he will do the like again; and we avoid a thief or murderer in proportion to the number and enormity of his crimes. It is the same principle, still further extended, that regulates most of the social and commercial transactions of life.

"This way of arguing," Dr. Halifax observes, "from what is acknowledged to what is disputed, from things known to other things that resemble them, from that part of the divine establishment which is exposed to our view to that more important one which lies beyond it, is on all hands confessed to be just." It was by an extensive but judicious application of this same principle that Newton traced the orbits of the planets, and unfolded the plan of the universe. It is for us now to examine whether a fair and legitimate use of the same mode of reasoning, will not also demonstrate the planets to be the scenes of sentient and intellectual activity.

The data by which this conclusion may be hoped to be reached is furnished jointly by observation and revelation. Science has furnished us with certain doctrines, and theology has furnished us with others; these are the two pillars on which our superstructure is to be reared.

And here we have an important advantage in the stability of our foundation. Astronomy is the science on which we depend in this case for most of our facts; and they are generally indisputable. Astronomy has been considered the most perfect of all the sciences, because it deals so largely in demonstration. I confess I should not like to build much upon such a science as geology, in connexion with which the most gratuitous and opposing theories are taken up almost at random. Just fancy, for instance, one of the highest authorities on such matters gravely giving it as the result of his calculations, that the time which has elapsed since the earth was sufficiently cooled to be the abode of living beings, is certainly not more than five hundred millions of years, and probably not more than one hundred millions of years!* This mode of disposing of four hundred millions of years is almost as cool as the earth itself, after the lapse of all that period. It will be as safe, I think, to allow it to cool for a few hundred millions of years longer, before we take much account of it, in the present enquiry. But astronomy, as I have said, deals for the most part with facts that are beyond question, and is therefore a secure foundation. The other pillar I have alluded to rests on inspiration, and so cannot possibly be moved. The teaching of scripture regarding the Creator and the mode of His operations, is a true and sure foundation; and it were a pity indeed if any edifice of error however beautiful, should be reared upon it.

Leaving metaphor, how are we best to state our views upon the subject on hands, so as to be clearly apprehended? I find there is no way in which I

* Sir William Thomson.

myself can see the matter so well, as by prosecuting a consecutive line of thought; and I shall therefore attempt that plan. I know that with very many, a number of disjointed arguments or illustrations would have more force; and there are others who will not take time to weigh a long argument, who would yet listen to a short one. I can only hope that both these classes may incidentally find something to their taste, and may possibly be induced thereby to pursue the matter further.

I think, then, the following propositions, if fairly established, will embody my reasons for believing that the planets are the abodes of intelligent beings.

I. The entire universe, being the creation of God, is the manifestation of infinite wisdom, as well as of almighty power.

II. It is not consistent with infinite wisdom to display more power than is necessary to accomplish the intended purpose.

III. On this principle, the planets must serve some higher purpose than the lighting up of the earth.

IV. The purpose most worthy of their Creator, and most in harmony with His revealed operations, is that of sentient and intellectual habitation.

CHAPTER IV.

First Proposition — Wisdom exhibited in Creation — Examples — The Mysterious and Remote in Nature subject to the same Law—Scripture testimony on this point.

THE first proposition is—*That the entire universe, being the creation of God, is the manifestation of infinite wisdom, as well as of almighty power.*

I think the first conception we derive from a survey of creation is the immense *power* that is there exhibited. The sun shining in his strength—the moon walking in brightness — the twinkling stars — the heaving ocean—the cloud-capt mountains—are to the most unreflective mind, evidences of majesty and greatness. But a little closer acquaintance with these things shows that they have been conceived by wisdom, as well as executed by power. The sun shines to enlighten and warm the world; the moon's grateful beams light many a weary traveller to his home; the ocean sends up its vapours for the forming of the clouds; the mountains attract those clouds, and send them down in showers upon the thirsty soil.

It is not difficult to discover the wisdom that underlies these that are the larger operations of nature, for they almost thrust themselves upon our observation. But if we examine the smaller contrivances of nature, we shall find them marked by not less exquisite skill. What a wonderful invention, for instance, is the human body. We are "fearfully and wonderfully made." That sentiment is readily embraced by any who take the most superficial view of the structure of the body; but the sentiment is greatly enhanced when we make an anatomical examination of the human machine. Books have been written on *the bones* of the body, and the offices they perform. Who would imagine, for instance, that in *the hand* alone there are twenty-seven bones, every one of which

has its own distinct duty? The muscles, veins, nerves, glands, are all contrived with the same marvellous skill. The *eye* is, perhaps, the most wonderful machine that man can investigate. "By a multitude of mechanical contrivances, all acting in harmonious combination, the eye, as a natural telescope and microscope, is made to advance, to recede, to move to the right, and to the left, and in every other direction, and to view near and distant objects with distinctness, so that a single eye, by the variety of positions it may assume, performs the office of a thousand."* All the treatises that have been written on the various senses, and their surprising adaptation to the duties they have to perform, are nothing more than sermons on the text given by the Psalmist, "I am fearfully and wonderfully made."

But the exquisite contrivances of the Creator have not been exhausted upon man, his favourite creature. He has not adjusted with so much skill the more important affairs of his creation, and left the less important to regulate themselves. Wherever we turn our eyes, we find evidences of the same wisdom. Whether we explore the vegetable or animal kingdom, we are amazed at the outgoings of infinite skill. The smallest insect that can be examined is in many respects as curiously and beautifully formed as man himself. The very animalculum that is a thousand times smaller than a grain of sand, is furnished with the most exquisite appliances for its peculiar mode of life. In fact, whether we consider the immense in creation, or the minute; ourselves or our surroundings; we perceive some of the traces of a skill that is infinite, and of a wisdom that is past finding out.

I say we discover *some* of the traces of infinite wisdom, for we can never discover them all. But it is a remarkable fact, and one of very great importance in this connexion, that man has not yet discovered any evidence of *folly* in the Creator's works. So far as human discovery has gone, it bears witness to the

* Dick.

wisdom of the Supreme Contriver. Very much indeed there is which we cannot understand, but nothing at all which we can condemn.

And what is the fair inference from this fact? Is it not that *all* the contrivances in creation are distinguished by wisdom, whether we understand them or no? If we were acquainted with a person, who had during a long life been always involved in a multiplicity of engagements, and who had invariably proved himself to be a man of judgment and discretion, we should be slow to condemn some new action of his, merely because its scope and bearing were beyond the sphere of our observation. We should rather conclude that he who had acted so wisely in other matters, would act wisely also in this; and though we could not understand its meaning, we would rest satisfied that the action was judicious and necessary.

But the Creator of the ends of the earth has been on trial for nearly six thousand years, and in all that time He has not incurred the remotest suspicion of folly or inexpedience. The actions of our discreet friend were *judicious*; but the works of the Creator are *perfect.* And what stupendous affairs has He been engaged in, and how innumerable, compared with those that engage man. The attention which the Creator bestows even upon one individual for a single day, surpasses, I have no doubt, the whole sum of human diligence and attention, since the world began. "Many, O Lord my God, are thy wonderful works which thou hast done, and thy thoughts which are to us-ward; they cannot be reckoned up in order unto thee; if I would declare and speak of them, they are more than can be numbered." And yet not one mistake has been committed, so far as we can see, in either creation or providence. Surely, then, we must be convinced that if our ignorance were dispelled, we would perceive the same wisdom reflected from the mysterious designs of the Creator, as well as from those that are transparent and familiar.

The history of science is nothing else than the history of discovery of God's wisdom. From whatever field science furnishes us with new truths, these are but the discoveries of harmonies and adaptations in nature, expressive of the wisdom of the great Artificer. And when science proposes a doctrine that seems to be out of harmony with the course of nature, that doctrine is received with great reserve, until perhaps some further discovery either confirms or confutes it. Thus the conviction prevails, that whatever is discoverable in nature must be referred to some law of harmony, and order, and design; which is the same as to say, that wisdom pervades and distinguishes all the Creator's works.

Now this doctrine is applicable to the remote parts of creation, equally with those that are near at hand. The earth is but a very small portion of the universe; but the wisdom that prevails here must manifest itself in all other places. The entire universe, being designed by the same Mind, and formed by the same Hand, must bear the impress of its Creator's character, how vast soever may be its boundaries. And as wisdom has, so to speak, controlled the energies of omnipotence, in relation to our earth and its surroundings, wisdom must exercise a like control throughout universal nature.

The different provinces of creation may be very variously circumstanced, both morally and materially, and different laws may prevail in different places; but whatever these incidental circumstances may be, they are governed by the same wisdom that arranged for the falling of a leaf, or the distilling of a dew-drop. A wise king, reigning over many nations and many races, will prescribe different laws for their different circumstances, but wisdom in every case underlies and dictates his course of action; so that the righteous administration to be observed in the most obscure corner of his dominions, is a sure and certain index of the righteous administration that distinguishes the

most important and most favoured regions. And so, though our world were but an atom in creation, it yet exhibits the wisdom of its Creator and Governor in such marked and numberless ways, as to furnish us with an infallible standard for estimating the character of his proceedure in the grandest exhibitions of his power. The wisdom that characterizes the small part of his works which we can observe, also distinguishes the other parts that are beyond our observation.

This doctrine, which we have found so agreeable with analogy, is also endorsed by sacred Scripture. In the Book of Proverbs wisdom is personified, and represented as being present with the Creator in the production of his works. "The Lord possessed me in the beginning of his way, before his works of old. I was set up from everlasting, from the beginning, or ever the earth was. When there were no depths, I was brought forth; when there were no fountains abounding with water. Before the mountains were settled; before the hills was I brought forth. While as yet He had not made the earth, nor the fields, nor the highest part of the dust of the world. When He prepared the heavens, I was there; when He set a compass upon the face of the depth; when He established the clouds above; when He strengthened the fountains of the deep; when He gave to the sea his decree, that the waters should not pass His commandment; when He appointed the foundations of the earth; then I was by Him, as one brought up with Him; and I was daily His delight, rejoicing always before Him."

"O Lord," exclaims the Psalmist, "how manifold are thy works! in wisdom thou has made them all." The works described here as manifold, are elsewhere declared to be universal. "All things were made by Him, and without Him was not anything made that was made."* These are the works which David

* John i., 3.

declares to have been made in wisdom. The whole of creation—no matter of how long standing, or how immense in its proportions—has been made in wisdom. Every atom—every agency—every appointment—throughout universal nature, has been ordered by infinite skill. From the little creature to which a drop of water is a world, up to the burning seraph that stands nearest to the Throne; from the dewdrop that sparkles in the morning sun, up to the blazing luminary that enlightens a hundred worlds—everything that God has made, He has made in wisdom.

We must be thoroughly imbued with this doctrine, as it is the first step towards the conclusion hereafter to be reached—the habitation of the planets.

CHAPTER V.

Second Proposition—Wisdom governed by laws—Law of Right—Law of Expediency—Human and Divine wisdom—Economy of power—Examples from the natural world, the moral world, and Christ's life on earth—Extent and effect of this principle.

Our second proposition is—*That it is not consistent with infinite wisdom to display more power than is necessary to accomplish the intended purpose.*

I think it will be apparent that wisdom must acknowledge some fixed laws by which to be guided. No matter under what circumstances, or by whom exercised, she cannot afford to rove at random, stamping certain actions as wise, merely because she accomplished them. This would not be wisdom, but folly. But wisdom, to be worthy of the name, must consent to regulate her actions by certain unchangeable laws of propriety and correctness.

The most fundamental law of wisdom is the distinction between right and wrong. This distinction must in every instance be recognised. Circumstances could not possibly arise in which wisdom could approve of what is wrong, or disapprove of what is right. In proportion, then, as our ideas of right and wrong are just and proper, will we be able to mark out the path in which true wisdom will move and act.

There is a secondary law of expediency, to which wisdom invariably conforms. After deciding upon the course that is fundamentally right, there is often left to wisdom a choice of means by which her intentions may be carried out. Experience suggests these means, and wisdom always selects the best. What means are really the best is proved by their suitability to accomplish the proposed end. And the harmony which we expect to subsist between the means and the end is marred, if the means either fall short of their object, or

go beyond it. It is just in proportion as they compass their design, that the wisdom which employed them is held in estimation.

This principle is universally acknowledged in human affairs. Nothing is more repugnant to a truly great mind than a parade of importance for the attainment of comparatively insignificant objects. The erection of a steam engine to kill a mouse is a pompous absurdity, in direct contravention of the acknowledged fitness of things. A wise man employs such means, if they are within his reach, as will tend to accomplish the result at which he aims; but he studiously avoids means that appear too great for his purpose, and which, if employed, might accomplish much more than he intended. He would consider this to be as great a violation of the law of expediency, as the adopting of means too weak or slender to secure his object.

But the proposition we wish to establish, refers not to human, but Divine wisdom. It states that "it is not consistent with Infinite wisdom, to display more power than is necessary to accomplish the intended purpose." And what can we know of Infinite wisdom, or how it would act? The law we have referred to may be very wholesome and proper for ourselves; but are we thus to set bounds to Him whose ways are not as our ways, and whose thoughts are not as ours?

Now I know that, compared with Infinite Wisdom, the greatest human wisdom is only foolishness. But the difference, I think, is not in kind, but in degree. To compare a dying ember with the brilliancy of the sun, would fall infinitely short of describing the difference between human and Divine wisdom. But as light is the same in kind, and subject to certain laws, whether it be emitted from a spark or from a sun—so wisdom, whether human, angelic, or Divine, I take to be the same in kind, and under certain conditions, regulated by the same laws. For no one will deny that the fundamental law of *right* regulates and controls the outgoings of Divine wisdom, as well as human.

There is a greater difficulty in applying the law of *expediency* to Divine action. We are ourselves governed by this law; and we have seen that it restrains us from using means that are too great for the object to be secured. That course, we have seen, is dictated by wisdom; but it must be observed, that it is dictated also by necessity. In numberless instances, we could not, if we would, employ means too great or important to serve our ends. On the contrary, we are continually failing in our pursuits, for the want of adequate means to accomplish them. We may form great designs; but our selection and use of means are so restricted, that our endeavours are often abortive, and our best considered designs come to nought. But with the Creator it is far otherwise. He "fainteth not, neither is weary." Every material and immaterial thing in creation is plastic in His hands, so that not one intention of His can fail for want of instrumentality. He is possessed of omnipotence, and

> "Summons into being, with like ease,
> A whole creation, or a single grain."

Is He then restricted by any considerations of expediency, whereby He must proportion means to ends? Might He not summon a whole creation into being, for the accommodation of a worm or a butterfly? Might He not create a million of blazing systems, for no other purpose than to dim their rays by sending them across the expanse of chaos, there to relieve the darkness of some lonely habitation? Or does He, while wielding infinite power with infinite ease, yet stoop to acknowledge the laws of expediency which regulate the conduct of his imperfect creatures? Does he recognise in the proportioning of means to ends, an eternal fitness of things, which even his infinite perfection cannot afford to dispense with?

I think the latter view will commend itself to every unprejudiced mind. There is something in the expediency we have spoken of so agreeable to our best notions of propriety, that we imagine the Infinite One

himself would not disregard it. I believe, however, we could not draw this conclusion with certainty, if it were not supported by other considerations. We need to be cautious in reasoning about anything pertaining to the Infinite, on merely abstract grounds; for the subject is too high for us. In this case, we shall go on surer ground if we examine how infinite wisdom *has* acted in things we can observe, and conclude from thence how it does or has acted, in reference to things beyond our observation. This is an appeal to analogy; and I apprehend it will go far to establish the proposition that it is not consistent with infinite wisdom to display more power than is necessary to accomplish the intended purpose.

I observe, then, that the natural world is replete with illustrations of this principle. In the adaptations and contrivances that everywhere strike our observation, we find the means exactly proportioned to the ends they have to serve; there is no exercise or parade of power that is not necessary. A certain velocity, for instance, was impressed upon the earth's diurnal motion; and we find the effect to be a regular alternation of day and night, exactly suited to our wants. Again; it would have been quite easy for omnipotence to have made our sinews of iron, and our flesh of brass; but such a display of power was not necessary, and so we received only such strength and power of endurance as would fit us for our intended avocations. Or, our organs of sense and powers of motion might have been made so perfect that we could have talked with the inhabitants of the moon—observed the scenery of the planets—or winged our flight to the sun. But not requiring such powers, we did not receive them; to have conferred them would have cost omnipotence no pains, but they would have involved unneccessary display, contrary to the principle of true wisdom. The trees and shrubs might have been made to strike their roots a hundred miles into the earth, instead of a few

feet or inches; but they received only the stability they required, on the same unerring principle of wisdom.

All the researches and discoveries in natural history, in botany, and even in mineralogy, are so many illustrations of the same principle. Wherever we turn our eyes in the natural world, and whether we examine matters cursorily or with the greatest scientific exactness—we find the Creator has made only such exhibitions of his power as the occasion warranted and required.

I think the *moral* world also illustrates this principle. We have here to do with the same Contriver and Administrator as in the natural world, and we may expect His mode of procedure to be the same. It is true, the harmonies of the moral world have been marred by sin; but such traces of them still remain as clearly attest the design of their Author.

Where examples abound, it is not easy to make selections. Look, for instance, at the means appointed to make men holy. It is nothing more than a display of the holiness of God. "Be ye holy," says He, "for I am holy." Surely Omnipotence could break the yoke of sin by other means, and make men holy in a moment. But such means would be out of proportion to the end in view, and are therefore not employed. He designs, again, to draw out our love to Him, and He uses the simple, but efficient means of manifesting His love to us. "We love Him," says the Apostle, "because He first loved us." In both these cases, unnecessary power is kept in abeyance, and other simple means are employed, which, but for the evil that is in the world, would never fail.

Observe again, how virtue is promoted, and vice discouraged, by the hope of reward, and the fear of punishment. It would have been easy for Omnipotence to have secured the end in view, by interposing such barriers as would make crime impossible. But that

course would have involved a waste of power, contrary to the method by which true wisdom operates. The Divine government is carried on, and human society is bound together, by moral laws, all of which acknowledge the same principle.

There is another point of view from which the working of this principle may be observed, and that is the conduct of "God manifest in the flesh." He who has so wisely adapted means to ends in both nature and grace, and always without any unnecessary display, is the same Being who veiled His glory in human flesh, and tabernacled among men. It will be instructive to notice if the mode of His operations under these circumstances was equally marked by the avoidance of unnecessary exhibitions of His greatness.

If we follow Him through all the incidents of His life, I think we shall find that Christ never used His supernatural power when His purpose could be effected by His natural power, On two occasions He miraculously fed a great multitude; but it is apparent from the narrative that these miracles were really necessary, and were not performed in any ostentatious spirit, but purely from benevolence. For we know that on other occasions He allowed both Himself and His disciples to be hungry and thirsty, without departing in the least from the ordinary human means of supply.

When surrounded by enemies who thirsted for His life, while His time was not yet come, how often did He slip out of their hands in the most natural manner, when the slightest volition of His will would have paralyzed their every power, and frustrated their every design. He chose rather to use the most ordinary means of preservation, because these were sufficient for His purpose.

And when He stood by the grave of His friend, and with the voice of omnipotence spoke into the "dull cold ear of death," how easy it would have been for the same power to have caused the stone to leap

from the cave's mouth! But this work required no such display of power, and therefore He directed the attendants to take away the stone. For the same reason, the grave clothes of Lazarus were not unbound by a miracle, but his astonished friends were ordered to "loose him and let him go." The omnipotent energy was displayed when nothing else was equal to the task, but it was not expended on what could be accomplished otherwise.

And when the Saviour Himself descended to the tomb, and completed His appointed time there, observe how natural power was combined with omnipotence, in His resurrection. Nothing short of omnipotence could burst the bands of death, and omnipotence was exerted for that purpose. But an angel, by His own proper and natural power, rolled the stone from the mouth of the sepulchre, and two other angels adjusted the forsaken habiliments of the tomb. How easy it would have been for the power that snapped the fetters of death, to have also miraculously attended to those minor incidents. But because such objects could be attained by natural means, no extraordinary, and therefore unnecessary power was exerted or displayed.

Thus it will be seen from the operations of God in nature around us—from His arrangements in the moral world—and from the history of Christ's doings while on earth—that it is the method and plan of infinite wisdom not to display more power than is necessary to accomplish the intended purpose. And since this principle is so universally acknowledged in regard to things we can observe, nothing can be more certain than that the same principle holds in reference to things beyond our observation. How various soever may be the manifestations of creative wisdom, the eternal principles that underlie and direct that wisdom can never change. We must then take the conviction along with us, that all the Creator's works, whether near at hand or more remote, are made upon this

principle. So surely as anything is created with design at all, so surely it is not superior to the design intended to be served by it.

If, then, any work in creation is manifestly too great for the objects known to be served by it, are we to conclude from thence that there we have a needless display of power, and that the means are out of harmony with the end? No. We must conclude, on the contrary, that other purposes unknown to us have also to be served, for which such displays of power are not at all too great or glorious. "Lo, these are parts of His ways, but how little a portion is heard of Him! and the thunder of His power who can understand?"

CHAPTER VI.

Third Proposition—Principle of economy of power applied to the heavenly bodies—Sketch of the solar system—A mad architect—Folly of supposing the planets to be merely lights for our world—They must serve some worthier purpose on account of their magnitudes, distances, magnificence, opacity and position—This doctrine confirmed by a reduced view of the solar system.

OUR third proposition is—*That on the principle now established, the planets must serve some higher purpose than that of lighting up the earth.*

In the scripture account of creation, the giving of light to the earth is held prominently forward as the purpose for which the heavenly bodies were appointed. But although no higher purpose is indicated, it is quite consistent with both the spirit and letter of scripture to hold that those bodies may serve other and higher purposes, which are not indicated. This, I think, has been made tolerably clear already. But now we go a step farther and assert that the heavenly bodies not only *may* but *must* serve a higher end than that of enlightening our world. Revelation merely *allows* us to hold this opinion; philosophy *requires* that we shall hold it.

The proposition established in the last chapter is, that it is inconsistent with infinite wisdom to display more power than is necessary to accomplish the intended purpose. We come now to apply this doctrine to the heavenly bodies. By going a little into detail, I think we shall find, that the power exhibited in their creation is too great to be justified on this principle. Considering that means are always in keeping with ends, the power displayed on those bodies is not warranted, if they fulfil no higher end than the lighting of our earth; therefore, some other end, more in keeping with the means, must be fulfilled by them.

I need hardly say that this mode of reasoning is admitted to be just in other matters. One strong argument for the immortality of the soul, rests on this very principle. Because the powers of the human mind are manifestly too great and noble for their employments in this life, it is concluded there must be a life to come, in which those powers shall receive their congenial occupation and development. The adaptation of means to ends is too remarkable and universal to admit of such a striking exception as the soul of man in its present surroundings; a solution of the incongruity must be found; and the only solution that can be found lies in the supposition that a more perfect state is to succeed the present.

In the same way, I think it can be made apparent, that the heavenly bodies are too great and noble for the work they have to perform, if that is to be limited to the enlightenment of our earth—and that the seeming anomaly can be explained only by supposing that some other and more adequate function is performed by them. And I venture to think that this view is supported by a higher degree of probability, or at least a more tangible probability, than even the conclusion as to the immortality of the soul.

Now in order to make this matter intelligible, it will be necessary to have some idea of the sizes, numbers, distances, and relations of the heavenly spheres. For the conclusion at which we hope to arrive, is not to be attained by a casual glance at the heavens on a starry night.

Without collating the most recent discoveries, the solar system may be said to comprise the sun, twelve primary planets, twenty-one secondary ones, and some hundreds of comets.

The primary planets, of which the earth is one, revolve round the sun in different orbits. Mercury, the planet nearest to the sun, is distant from him about 37 millions of miles, and makes her revolution in 88

days. Venus is distant from the sun about 70 millions of miles, and revolves round him in 224 days. The earth comes next, revolving round the sun in 365 days, at a distance of 93 millions of miles. Then follow Mars, Ceres, Pallas, Juno, Vesta, Jupiter, Saturn, Herschel, and Neptune. These occupy their various orbits, in the order mentioned. They move at very different rates of speed, but still as the distance from the sun increases, the time occupied in revolving round him increases also. Thus Neptune, the most remote, is no less than 2,860 millions of miles distant from the sun, and occupies above 160 years in revolving round him. To appreciate the velocities at which these bodies move in their orbits, it may be stated that they vary from 16,000 miles an hour to 111,000 miles an hour. The earth herself moves at the rate of 75,000 miles an hour, or 1,250 miles every minute.

It may be stated further, that these planets all revolve on their axes. Their motions in this respect have also been ascertained. Jupiter and Saturn require about ten hours only to make one revolution, while Mercury, Venus, the earth, and Mars occupy about twenty-four hours.

The sizes of the planets vary, from Pallas which is but 110 miles in diameter, to Jupiter which is 88,000 miles in diameter. Fifteen globes of the same size as Mercury would only be equal to the earth, while nine hundred and ninety bodies like the earth would be but the bulk of Saturn.

I have here taken no notice of fifty or sixty very small planets lately discovered; and even while I write, the discovery of another very large planet is announced. The object we have in view does not require that every detail should be summed up. A very general statement of facts is what I wish to present; and I think that will be found sufficient.

The *secondary planets*, as already stated, are twenty-one in number. These are the moons or satellites that revolve round the primary planets in the

same way that the latter revolve round the sun. As these satellites accompany the planets round which they revolve, they are carried round the sun along with them. Thus they describe two motions, besides a third motion upon their axes. These moons are thus distributed among the planets; one is given to the earth, four to Jupiter, eight to Saturn, six to Herschel, and two to Neptune. Their distances from their primaries vary from one hundred thousand miles to two millions of miles, our own moon being distant from the earth about two hundred and forty thousand miles. Their sizes are very various, the largest of them being greater than the earth and moon put together.

The *comets* that have been observed within the limits of the solar system number several hundreds, and millions more are suspected to exist. They are supposed to revolve round the sun, but in orbits so vast and eccentric as rarely to be seen at all. However, by accurate observations, the paths of a small proportion of them have been calculated. These certainly belong to the solar system; whether all the others do so is uncertain, pending further discovery.

This is a cursory view of the solar system. How does it accord with that economy of power which we have seen to be a regulating principle in creation? Overlooking for the present the sun and the comets, there are thirty-three other bodies whose creation must be accounted for in harmony with that frugality of display which characterizes all the Creator's works. And the position we have taken up is, that the solar system exhibits not an economy, but a wanton profusion of display, if some higher purpose has not been contemplated, than the lighting of the earth.

In the lighting up of a room, which is the same thing in principle, we know what plans are commonly adapted. If the room be small, a single lamp or gas-light is sufficient. If it be large, several lamps must be dispersed through it; or sometimes a number of

gaslights are grouped together, their rays being dispersed by a reflector. Where lime-light is used, a single jet is usually sufficient for the purpose. All this is reasonable, and agreeable to the relation that the means should bear to the end in view.

But what would be thought of an architect whose plans to light up a room consisted in suspending over it a jet of gas almost as large as the room itself, but so far removed that its effect would be almost destroyed? And then if we found that to supplement the feeble light of his one jet of gas, our architect provided for other jets, not merely as large as the room, but twelve hundred times larger, what opinion could we have of his skill? If we found further, that these very huge gaslights were to be so far removed as to give even less light than the first jet, the absurdity would be very much increased.

Evidently our architect is mad; but his folly has not yet reached its climax. For he has arranged for a great number of these gaslights, but several of them are to be invisible altogether, not on account of their size, but owing to their distance. He has actually set down in his plans that there are to be thirty-two of these lights, but only six of them are to be seen, the remaining twenty-six being entirely lost to view.

Can folly farther go than this? Yes, a great deal farther. Our architect considers his arrangements yet much too simple, so he improves upon them. He explains that these thirty-two lights, so very large and very distant, are not really lights at all, but merely reflectors. This gives him the opportunity of arranging for a real light, whose rays are to be caught up by these reflectors and sent down into the room that is to be lighted. Now this real light is to be a stupendous affair, really worthy of the ingenuity of our architect. The light in question is to be a vast globe of fire at white heat, so brilliant that it cannot be gazed upon, and so large as to be one million, three hundred

thousand times of greater bulk than the room to be lighted by its beams.

But the absurdities of this mad architect will not be duly appreciated until it is stated that the means proposed—so unspeakably grotesque in their profusion—would not attain the end in view. If his plans could really be adopted, which of course they could not, the room would be cheered by only a faint glimmering of light.

Now the fact is—and I state it with due reverence—that all the monstrous absurdities I have mentioned have not only been conceived but perpetrated in the solar system, if the lighting up of our world is the principal object to be served. For the earth is the room I have supposed to require lighting up. Venus is the jet of gas nearly as large as the entire room, for that planet is only one-eighth less in size than the earth. But Venus, at her nearest approach, is distant from the earth no less than twenty-six millions of miles, so that her size and effects are reduced to that degree that she appears only as a star, and is in fact the morning and evening star.

Further, the planets Neptune, Herschel, Saturn and Jupiter correspond to the other greater lights, which our architect placed so very distant from the room that their effect was much less than that of the smaller and nearer light. For Neptune is really sixty times larger than the earth, Herschel is eighty times larger, Saturn is nine hundred and ninety times larger, and Jupiter twelve hundred and eighty times larger! But these bodies are placed so very distant from us that their effect is almost lost, and instead of burning the earth to a cinder as might be feared, they barely relieve our darkness with their rays. For Jupiter, at his nearest approach, is 401 millions of miles distant from the earth, Saturn is 815 millions of miles distant, Herschel is 1,700 millions of miles distant, while Neptune is 2,700 millions of miles distant! What stupendous magnificence is here, but what amazing absurdity also,

if the lighting up of the earth is the only or chief object to be served.

But the absurdity is greatly heightened when we observe, that not merely a few very large globes have been created that give a little light to the earth, but several smaller ones that give no light at all. These bodies are very large nevertheless, and they do give light like the others, but not to the earth, for they are too far distant from it. The fact is, that of the thirty-two globes that are supposed to give light to the earth, six only are visible to the naked eye. The others can be seen only through a telescope. Not only so, but even with the best telescopes, two of the largest planets have been but recently discovered. Herschel, which is eighty times larger than the earth, was discovered only in the year 1791, and Neptune, which is almost as large, not till the year 1846. Such are the immense distances at which those luminaries are placed that are supposed to be appointed by a wise Creator to enlighten the world we inhabit.

If such a supposition be so evidently preposterous, what is to be said of *the moons* of the planets? Neptune, as we have said, has two moons, Herschel has six, while Jupiter has four, and Saturn has no less than eight. Have these also been created to give light to the earth? If so, they do not fulfil their end, and have been made in vain. But we have seen that nothing has been made in vain; therefore those globes which do not give light to the earth must have been made for some other purpose.

This view is greatly enhanced by a consideration of *the magnificent appointments of Saturn*, in particular. That planet has eight moons blazing in her firmament, some of those moons being larger than the earth herself; but that is not all. She is encircled by two luminous rings or belts, one of which contains 8,000 millions of square miles, and the other 20,000 millions of square miles. What glorious scenery must be there displayed! The scenic effects produced by

those arrangements, may be such as no man can express or conceive. The material splendour of that world must be such as we associate with the habitation of the blessed. Yet it is chiefly *local* after all. Neither the moons nor the belts of Saturn can be seen from the earth, except through a telescope. However direct and effective may be their influence on Saturn, their relation to the earth is very remote indeed, and proportionately barren of result. In a universe where means are adapted to ends, how absurd is the supposition that such magnificent arrangements were intended for our solitary or special accommodation.

But this picture is not yet complete. In lighting up the supposed room, in nothing did the madness of the architect appear more forcibly than in making his lights reflectors merely, whereas he might have made them real lights, but much smaller and much nearer. Yet the same plan has been pursued in the solar system. The thirty-two planets that are supposed to give light to the earth are in themselves opaque, and can shine only as the sun's rays are reflected from them. All the profusion we have adverted to, is thus multiplied a thousand fold. For the sun, besides being far more glorious than any of the planetary bodies, is five hundred times greater in bulk than the whole of them taken together. Can this amazing effort of creative power be in harmony with the principle already established—that of the economy of display? It can—but only on the supposition that worthier and higher ends have to be served than such as have reference to the earth at all. If the lighting of our world was the chief object contemplated, the mode of doing so is more insane than would be the erection of the most gorgeous cathedral, for no other purpose than that the evening sun might be reflected from its windows, upon some lowly habitation.

It ought to be added here, and then the climax will almost be reached, that the planets in traversing their various orbits, are often in such positions, that

they cannot reflect the sun's rays at all upon the earth. Moving in different paths, and with different velocities, they do not keep in company round the sun; and those not in our half of the circle can be of no service to us. Not only so, but Venus, being nearer to the sun than the earth is, does what she can to obscure his rays by passing between him and us. This transit of Venus, however, can hardly occur twice in a century, and it so happens that this very year* the phenomenon is to take place. Now supposing the lighting of the earth to be the chief duty of the planets, it is evident they perform that duty not only very feebly, but very intermittingly. The end is not attained, although the means are so great and glorious. Surely, if our world only was to be accommodated, it might have been so, without such wanton prodigality of display. But the display cannot be prodigal, since means must always be in keeping with their ends. The inevitable conclusion, therefore, is that the planets must fulfil some other and more worthy end, in which the earth is not at all, or very remotely concerned.

I have only one other remark to make in this connexion. It must not be overlooked that while the planets are merely reflectors of the sun's light, they are very efficient reflectors. That they give little or no light to the earth is owing to their distance from us. But they do give light abundantly elsewhere. They illumine millions and billions of square miles, by rays that never have penetrated, and never shall penetrate to the earth at all. Saturn, for instance, that appears to us only as a star, will be to Jupiter an orb of vast size and brilliancy. Even the moons of Saturn will at certain times be plainly visible from Jupiter. All the planets shine upon each other in proportion to their size and proximity. Herschel and Neptune, the most remote of them all, and of no possible service to us as light bearers, are yet of great importance to each other. They cheer each other by their grateful beams, oblivious

* 1874.

it may be of the fact, that there are any other such bodies in existence besides themselves.

What is to be said, then, of the wisdom that appointed those bodies to give light to the earth as their chief business? Not only do they fail in that object, but they accomplish another object very different. Considered as lights to the earth, they are as great a failure as a number of servants, who instead of attending to their master's comfort, should neglect him altogether, and study only to accommodate each other. If the planets were really made in wisdom, and therefore without unnecessary display, the lighting of our world cannot have been the only or chief end of their appointment.

These considerations, taken conjointly, will be deemed sufficient, I think, to establish the proposition which constitutes the third step of our argument. We have seen from the *magnitudes* of the planets—from their *distances*—from their *magnificence*—from their *opacity*—and from their *positions*, that on the principle of the economy of display, they must serve some worthier purpose than that of lighting up this world.

If anything is wanting to sustain this conclusion, it is not, I believe, in the facts that have been stated, but in our due appreciation of those facts. For I apprehend that *the numbers* we have had to employ in expressing the sizes and distances of the planets, are too great to be adequately conceived. I have read of a tribe of Indians who could count correctly up to twenty, that number being represented by their fingers and toes. When any greater number would be expressed, they pointed to the hairs of their head to signify that it was innumerable; hundreds, thousands or millions were then all of the same import. And so I believe that if the distances and magnitudes of the planets were stated to be a tenth part of what they

are, our appreciation of them would still be much the same, for the numbers in both cases are too great for our comprehension.

Now I shall try to remedy this defect—which is not a defect of the argument but of the understanding—by presenting a *reduced* view of the leading bodies in the solar system. Let us, therefore, reduce the earth from being a globe *eight thousand miles* in diameter to be a small globe of *one yard* only in diameter; let us reduce the other planets in the same proportion, at the same time proportionately reducing their distances; and we shall then have such a condensed representation of facts as may be somewhat intelligible.

Let the mind then be familiarized with the idea of the earth being one yard only in diameter, which would be about equal to a large sized globe used for educational purposes. The relative sizes and distances of the other planets would then be nearly as follow.

Mercury would be nearly half-a-yard in diameter, and above four miles distant. Venus would be nearly one yard in diameter, and almost two miles distant. Mars would be half-a-yard in diameter, and three and a half miles distant. Jupiter would be nearly eleven yards in diameter, and twenty nine miles distant. Saturn would be ten yards in diameter, and fifty eight miles distant. Herschel would be over four yards in diameter, and more than one hundred and twenty miles distant. Neptune would be nearly four yards in diameter, and above one hundred and eighty miles distant. All these appointments, be it remembered, are supposed to be for the lighting of the earth—a globe one yard in diameter.*

But imagine further, that you see four of these planets surrounded by moons, varying in number from

* In referring to the distance of the sun and planets, I have taken the generally received figures, although the most recent reliable calculations have shown these not to be quite accurate. I believe 91½ millions of miles is now ascertained to be the sun's mean distance, instead of 93 millions; and the distances of the planets would also be somewhat modified. But I have considered an approximation to facts of this kind quite sufficient, when used, as here, merely for illustration.

two to eight to each planet; observe the splendid rings that encompass Saturn; scan the space between Jupiter and Mars a little more critically and notice four other planets revolving there; direct a still more searching scrutiny through other parts of space, and observe the fifty or sixty other bodies still smaller than the rest—and say, how is such display to be accounted for? We have seen that it is the wisdom of the Creator to proportion means to ends, but the means here employed are out of all proportion to the end, supposing that to be merely the lighting of the earth. Just imagine a hundred globes of light distributed as we have mentioned; in point of size, one of them being no less than eleven yards in diameter, and in point of distance another removed a hundred and eighty miles—and say, must not the wise Contriver have had other ends in view besides the accommodation of a small globe of one yard only in diameter?

Yet after all, those bodies, so vast and so distant, are merely reflectors of the sun's light. If they were created and placed there merely as lights for the earth, the same must be true of the sun himself, for he is the centre of them all, and it is from him they derive their efficiency as light bearers. Let us therefore reduce the sun's bulk proportionately with theirs, and see if the difficulty is thereby obviated. The earth, then, being one yard in diameter, the sun proportionately reduced will be a vast globe of one hundred and eleven yards in diameter—in fact, above a million times larger than the earth. This is the most imposing fact of all. Let it but be received with the authority to which a simple statement of the truth is entitled, and the conviction must be irresistible, that the sun and planets cannot have been created merely for the accommodation of this obscure and insignificant sphere, which it is the lot of mortals to inhabit.

This reduced view of the solar system is such as it would appear to an eye capable of surveying the whole of it at a glance. To an inhabitant of the earth, how-

ever, the prospect is very different. For it must be repeated, that of the various orbs in our system, numbering about a hundred, six only are visible to the naked eye. All the others, so far as we are concerned, are "unbeheld in deepest night," and do "shine in vain." But this will excite no surprise if we consider the relative bulk of the earth's inhabitants; and to complete our illustration, it is only fair to reduce *them* in the same proportion as we have reduced the earth and the other planets. The result of this calculation is surprising indeed. The earth being a globe of one yard in diameter, each six foot inhabitant will measure the 195 thousandth part of an inch! According to our reduced scale of magnitudes, 195,000 lords of creation standing on each other's heads, would attain an altitude of a whole inch. And if these sons of thunder should build another Babel two miles high of the original standard, that triumph of enterprise and perseverance would correspond to the one hundredth part of an inch!

But look at the surroundings of man in this reduced scale. See the expense and display that characterise the lighting up of his habitation. Himself being the 195 thousandth part of an inch in height, or more than fifty thousand times smaller than a fly, he is yet surrounded by a hundred globes of light, most of them, however, being so distant that he cannot so much as see them. But they are of immense size, some few of them being about ten yards in diameter, while the largest is no less than a hundred yards in diameter!

Have such stupendous displays of creative power been intended for his accommodation merely? That might be so, if the Creator had not been wise as well as powerful. But we have seen that He is infinitely wise, and that it is the mode of infinite wisdom to proportion means to ends, not displaying unnecessary power for the attainment of the desired object. But the mode of lighting up the earth that has been

adopted, is in direct contravention of this principle, if some other object worthy of such means has not been contemplated. The rectitude of the divine procedure, however, is above impeachment. We are, therefore, shut up to the conclusion, that other purposes must have been intended to be served, worthy of the means that have been employed.

CHAPTER VII.

Third Proposition continued—The Comets—Fixed stars—Immensity of Creation—Comparitive smallness of the Earth—Inevitable conclusion.

HOWEVER irresistible may be the conclusion on which we have been insisting, there are yet other considerations, calculated, I think, to render it overwhelming.

I hope I shall not be considered tedious in illustrating this point at so much length. I regard it as a most important point in our line of argument, and I should like to bring it home with that degree of conviction to which I think it is entitled. To do so, I must not forget that some minds require much clearer and weightier evidence than others; in fact, what is positive redundancy to some, is hardly the full complement for another class.

The point I have been trying to establish is, that the heavenly bodies must have been created for some worthier purpose than the giving of light to the earth. The more firmly we are convinced of this doctrine, the more ready we will be for another step forward, namely, to enquire what that object is, for which those bodies have been appointed.

Our illustrations hitherto have been derived from the sun and the planets of our system. The *comets* next claim our attention, but I shall not lay undue stress upon them, considering that so little is positively known about them. The interest in them, however, is greatly enhanced just now; for while I write these lines* one of those bodies is clearly visible, and in a few days will have attained its nearest proximity to the earth.

Now without going into the matter too deeply, we may fairly ask what bearing the comets have upon the

* July, 1874.

question we are considering. Have they also been appointed to give light to the earth? If so, why do they not fulfil their mission? Or can it be pleaded that they do fulfil it? He could not be considered a good servant, who gave but a very rare and indifferent attention to duties requiring constant and careful application. But on this showing, the comets are bad servants indeed. If they were all visible together, numbering several hundreds, they would not afford us more than a faint glimmering of light. But consider how seldom they appear at all. I think it is sixteen years since one of them was visible in the heavens. Some of them disappear for about a hundred years, while others whose orbits are not known are supposed to occupy thousands of years in one revolution. Numerous as they are, the appearance of even one of them is so great a rarity, that in the infancy of science it was understood to portend some terrible disaster. However, the paths of a small proportion of them have now been calculated, and the reappearance of these can be foretold with great accuracy. But where the others are in the meantime, what orbits they move in, what missions they fulfil elsewhere, is all unknown.

Because some of the comets have been proved to belong to the solar system, it has been generally assumed that they all do so. It may turn out, possibly, that such is not the case at all. The limits of our system, vast as they are, would appear to be too contracted to furnish the orbits which some of those bodies appear to move in. The vastness of those orbits is evidenced by the extraordinary time occupied by some of the comets in one revolution. Besides this, their orbits appear to be very eccentric, requiring a proportionately greater range of space. And the speed of those bodies is in some cases prodigious, the comet of the year 1680 being calculated by Newton to move at the rate of 880,000 miles an hour. Their physical constitution is comparatively little understood, but so far as has been examined, it appears not to be uniform, but very

various, and for the most part gaseous. Campared with the planets, they appear to be very independent of the solar influence, as they sometimes approach within one million of miles of the sun, and then instead of being forcibly absorbed by him, they commence to recede on their outward journey. And the light which they emit, unlike that of the planets, is not merely a reflection of the solar rays. Four-fifths of the light of the comet now visible, have been calculated to belong to the comet itself, one-fifth only being a reflection of the sun's light. These considerations, with others that might he added, appear to render it not improbable, that some of the comets do not belong exclusively to our system, but may move, according to their own particular laws, through the bounds of thousands of systems, making rare but regular appearances in them all.

These uncertainties regarding the comets are introduced here, that I may present them *as* uncertainties, and then enquire if such bodies can have been appointed merely or chiefly to give light to the earth. With our ignorance of them staring us so directly in the face, it would be equally unreasonable and presumptous to make such an assertion. Evidently they have been made for other uses, to be in harmony with the law already established—the adaptation of means to ends. And if such be the divine procedure with regard to the comets, is it not likely to hold in reference to the planets also? I shall not be attempting hereafter to prove, that the comets are inhabited, but the fact that they must serve other ends than the giving of light to the earth, may tend to remove any remaining doubt as to the application of the same doctrine to the planets. For the principle that regulates the divine conduct is the same in both cases, but is if possible more clearly seen in the case of the comets; our greater ignorance here, only heightens the probability.

But we must now proceed a step farther, and appeal

to the evidence of the *fixed stars*. The point for which we have been contending is perhaps already sufficiently established; but our position will be very much strengthened, by referring in a few words to the relation which the fixed stars bear to this question.

I have stated more than once that only six of the planets are visible to the naked eye. What then are those thousands of stars that we see nightly sparkling in the firmament? Those are the fixed stars. They differ from the planets in not revolving round the sun, as they do; in fact they have no immediate relation to the sun at all. They do not, like the planets, shine by the sun's reflected light; they shine by their own native light, and are really suns themselves. It is believed also, on analogical grounds, that each of them is the centre of a distinct system of revolving spheres, as our sun is the centre of the solar system.

It is evident those stars or suns must be immensely *distant* from us, and from each other, to be accommodated with sufficient space for the orbits of their attending planets. The fact is, their distance is so vast that no adequate idea can be formed of it. Human science, that can easily measure the sun's distance, and weigh him as it were in a balance, is here entirely confounded.

Various illustrations have been employed to give some idea of the distance that intervenes between us and those stars. Nothing with which we are acquainted travels so quickly as *light*. It traverses the immense distance between the sun and the earth—ninety-five millions of miles—in the space of eight minutes. Now it is believed on good grounds, that the nearest fixed star is at least twenty *billions* of miles distant; light would therefore require *three years* to travel from thence to our earth. A cannon ball, moving at the rate of five hundred miles an hour, would require upwards of *four millions of years* to traverse the same distance—that is, more than seven hundred times the period that has elapsed since the creation.

If such be the distance of the nearest stars, we are left to imagine what may be the distances of the more remote, considering the vast space that must lie between them. It has been stated, that there are stars from which light would not yet have reached us, if it had been despatched hither on the dawn of creation. Vast as is the distance of the sun, such a star as I refer to would be four hundred millions of times more distant still, and would render the sun by comparison quite at home with us. For if a journey to the sun could be accomplished in *one minute* which would be eight times quicker than the motion of light, the journey would need to be continued at the same speed night and day, for *seven hundred and fifty years* before the star in question would be reached!

It has, again, been stated—and the fidelity of the representation is hardly open to question—that if the space occupied by our entire system were formed into a solid globe, extending from the orbit of Neptune on the one side to the orbit of the same planet on the other, which would represent a diameter of 5,720 millions of miles, and if such a vast globe were as bright as the sun shining in his strength, there are places within the range of telescopes where such a body would appear as nothing more than a twinkling star, and if suddenly blotted out, would scarcely or not at all be missed. I have met with no illustration calculated to bring home the conception of this matter, with such amazing and astounding force.

Wild as such suppositions may appear to those who have not thought much upon the subject, they are warranted by the best observations and deductions of astronomy. When viewed through a telescope that magnifies objects two thousand times, the fixed stars do not appear larger than when seen by the naked eye. Therefore if we were placed so much nearer to them that every *two thousand* miles were reduced to *one* mile, they would not appear larger than they do at present. The distance is so vast that its effects would

not be sensibly modified to us, though it were but the two thousandth part of what it really is, This fact, if properly pondered, will perhaps justify the most extreme representations that have been made under this head. So much for the distances of the fixed stars.

It will readily be perceived that the *sizes* of those bodies must be prodigious, else they would be invisible at such distances. We have seen that the planet Neptune is not only invisible to the naked eye, but that for centuries it remained undetected by the most powerful telescopes. It was only the most recent improvements in the telescope, together with accumulated astronomical knowledge, that brought Neptune to our view at all. Yet this is one of the largest planets in the solar system, being actually fifty times greater in bulk than the earth. What then must be the immense sizes of those stars that are plainly seen by the naked eye, and yet so incomparably farther distant. Let their distances, as we have tried to illustrate them, be kept in view, and their astounding magnitudes may be in some degree appreciated.

It is the consideration of their distances and magnitudes, which forces the conclusion upon us, that the fixed stars shine by their own native light, and are really suns themselves. But we do not therefore conclude them to be alike in size and splendour. Very probably they vary in these respects as much as the planets of our own system. The diversity that prevails throughout our own world favours such an idea. We cannot, therefore, conclude that our sun is the most glorious orb in creation. Possibly he ranks no higher among the suns than our earth ranks among the planets.

Another idea has to be added here, and that is the *number* of those stars or suns. That is not to be computed by the few thousands we see scattered over the concave of the heavens. Millions more blaze in the far regions of space where the unassisted eye cannot

penetrate. While about *four thousand* stars only can be seen by the naked eye from every part of the earth, it is computed that over *eighty millions* come within the range of the best telescopes. That is to say, that if we could see all the stars that can be seen through the telescope, we would see *twenty thousand* for every one we see at present. In an observation made by Dr. Herschel in the year 1792, he found that in forty-one minutes of time, *two hundred and fifty eight thousand* stars had passed over the field of view in his telescope! When such facts regarding the *number* of the fixed stars, are added to those concerning their *distances* and *magnitudes*, the imagination is almost paralyzed in grappling with their vastness.

Now if we suppose the number of fixed stars to be eighty millions, and that each one of these is surrounded, like our sun, by a hundred planets, we shall have an aggregate of *eight thousand millions of globes* within the space that has been swept by mortal vision! It will thus be apparent, that not only our earth, but the sun and all his planetary attendants are but a mere speck in the vast proportions of the universe.

But can it be supposed that the latest discoveries in astronomy embrace the utmost bounds of creation? Such an idea might as well have been entertained a few years ago, but subsequent discoveries would have proved it to be a great delusion. And shall we now set bounds to the energies of Omnipotence, merely because our observation has been a little farther extended? Does the Creator cease to act where man ceases to observe? Nay more,

> "Can man *conceive* beyond what God can *do*?"

There is a limit which even imagination cannot pass; but the region beyond that limit is a congenial sphere for the operations of Omnipotence. With the Creator

> "Nothing but *quite impossible* is hard.
> He summons into being, with like ease,
> A whole creation, or a single grain.
> Speaks He the word—a thousand worlds are born!
> A thousand worlds! There's room for *millions* more;
> And in what space can His great fiat fail?"

The history of science in general, and of astronomy in particular, might well teach us that "we know nothing yet as we ought to know." Instead of having scanned all the wonders of the heavens, is it not more likely that the sum of all human discovery has introduced us but to the very suburbs of creation? Inconceivably vast and numberless as are those orbs of which we have a faint discovery, they may be but shadows of transcendently greater glories that remain behind.

For it is to be observed, that all we have advanced as to the immensity of creation, is but an outline of what has actually been discovered. Not only do satellites revolve round planets, not only do planets revolve round suns, but whole systems, it is believed, revolve round other systems. And there are indications of other and more complex motions—it may be in circles, ellipses, or straight lines—that are too vast and too distant to be traced.

It is now considered certain, from accurate and repeated observations, that our sun, with all his attending planets, together with all other discovered suns and their revolving luminaries, are being carried forward through space with inconceivable velocity. We are thus, it is believed, moving round some unknown centre, describing, in company with the most distant stars, a mighty circle, compared with which the orbit of Neptune contracts almost into a point. And if that centre be in keeping with the vastness and number of the globes that revolve around it, and in keeping also with the vastness of their orbits and their rates of speed—it is not surprising that it has been supposed to be the seat of the THRONE OF GOD. This is, perhaps, the most sublime conception that can engage the human mind. If it could—which it cannot—be received in all its reality, it might unfit us, possibly, for all sublunary pursuits. It is a wise and gracious Hand that thus partially—but only partially—lifts the curtain of the unseen, to stimulate our expectation of the glories yet to be revealed.

From such considerations, it will appear not a mere rhetorical flourish, but possibly less than the sober fact, to suppose that the proportion which our world bears to the whole universe is not more than a grain of sand compared with the bulk of this entire globe.

Apart from the fact that the universe is so stupendous as astronomy proves it to be, there are some abstract considerations that strongly support such a conclusion. Let it be remembered that the Creator has had a past *eternity* wherein to work; He has had *infinite space* for the displays of His glory; and He is possessed of *infinite wisdom and power* for the execution of His designs. Besides, He has no occasion to annihilate anything, for He made nothing in vain; therefore "all His works stand as they were ordained, for all are His servants."

What unspeakable marvels of creation will not such conditions account for? When we see that it has pleased the Infinite One to create anything material whatever; when we see, moreover, the stupendous magnificence and extent of His creation, as unfolded by astronomy; and when we remember the unlimited conditions under which He has been acting—we may well be prepared for such ideas of the vastness and grandeur of the universe, as are beyond the power of language to express. And perhaps such considerations as I have adverted to, may justify the most extreme representations of our world's comparative littleness, in the amplitude of universal nature.

Now I have brought forward and stated at some length these facts connected with the fixed stars, hoping that the bare statement of them may be sufficient for our purpose. The question to be decided is, whether those stars have been made primarily to give light to the earth. Surely the question needs only to be put, to be answered. The holding of the affirmative opinion would launch us in such numerous

and amazing absurdities, that it would be almost an insult to common sense to recapitulate them.

I shall just mention three of these absurdities, in connection with the three aspects of the fixed stars that came chiefly under our notice. With regard to their *distances*, it would follow that some of them were purposely made thousands of years before the earth, in order that their light might have sufficient time to reach us—or supposing them to be made at the same time as the earth, their light has been travelling towards us ever since, but has not yet reached us, and possibly may not reach us until our earth be burned up. With regard to their *magnitudes*, it would follow that matter has been created for the accommodation of matter in the proportion of at least 80,000,000,000,000 to *one*, but so disposed as to be hardly any accommodation at all. This is to take no notice whatever of the planets, and assuming the sun to be of average size among the fixed stars. With regard to their *number*, it would follow that while one of them would burn the earth to a cinder if not removed several millions of miles from it, yet that they are so numerous that if equally divided between every man, woman and child on the earth's surface, each individual would be accommodated with about *eighty* globes of light. This is taking the suns and planets at the number previously stated. With regard to their *motions*, equally astounding absurdities would follow the assumption that they have been created solely or chiefly to be lights for our world.

Our argument might perhaps have commenced here, but that I wished to take nothing for granted. To state the naked facts of science in reference to the glory and extent of creation, might itself be sufficient to convince most minds that such power has not been displayed for the small particle of matter called the earth. But we have gone back much farther than such a mere statement. We have tried to show that all

creation has been planned by infinite wisdom, as well as executed by almighty power. We have next endeavoured to demonstrate that it is the method of wisdom to proportion means to ends, the Author of all things always acting with as much frugality of display, as if the putting forth of power really cost Him an effort. Then we have looked at some actual displays of power visible in creation—notably, the planets, comets and fixed stars—and we have found beyond all question, that such displays are too great to be explained by relation to our earth merely. The principles previously established would be outraged and violated, by such a wanton disproportion between means and ends. And the only explanation of such a seeming anomaly is, that the displays of creative power referred to, have other relations and uses of suitable and proportionate importance, in which we are not at all, or very remotely concerned.

We therefore conclude that the planets of this and other systems serve other and higher ends than those which appear on the surface of the Mosaic history.

CHAPTER VIII.

Fourth Proposition—Planetary Habitation most worthy of God—Argument based on the Divine Goodness—Object of Universal Worship—Planetary Habitation most in harmony with His revealed operations—Analogies derived from the Immense—Analogies of the Minute—Animalcules.

We are thus brought to the consideration of the fourth proposition originally laid down. This deals with the object for which the planets were created. Having endeavoured to show that their chief use consists not in their subserviency to the earth, as light bearers, our fourth proposition asserts that *the object most worthy of their Creator, and most in harmony with His revealed operations, is that of sentient and intellectual habitation.*

Now it is here stated, in the first place, that the planets are inhabited, because they could serve no other end so worthy of their Creator. This is a fair, though somewhat abstract proposition; if it can be established, it will be conclusive. For the Creator being infinite in all His perfections, it follows that whatsoever form His creative power has taken, it is the best that could be taken, and therefore most worthy of Himself; and whatever is most worthy of Himself must be the very thing that has been performed.

But we shall not have to rest upon such abstractions, for the proposition I have announced states, secondly, that the habitation of the planets is most in harmony with God's revealed operations; that is, it is most consistent with analogy. This will lead us into a more practical view of the matter.

Now I think one or two considerations will be sufficient to show, that the appointment of the planets to be scenes of habitation, is the appointment most worthy of their Creator.

Goodness is one of the Creator's attributes. It manifests itself in the diffusion of happiness, wherever that can be done in harmony with His other attributes. Goodness is continually looking out, as it were, for recipients of its favours, and rejoices in every opportunity of dispensing them.

But nothing is capable of receiving such favours except living creatures. If the material universe were ten thousand times more glorious than it is, yet uncheered by any spark of *life*, the attribute of goodness in the deity would have remained eternally unemployed. I will not go so far as to say that the existence of this attribute *necessitated* the creation of life in some form; but certainly there is a wonderful harmony between the attribute of goodness on the one hand, and the recipients of it upon the other. That animals are merely automata, as has lately been revived by Professor Huxley, is not worthy of being seriously discussed. Everything that has life at all is a partaker, in some degree, of the goodness we are speaking of. Animals of the mere sentient type, in their various gradations, experience more or less of *pleasure*, while those of the intelligent order enjoy different degrees of *happiness*.

Now let the vast dimensions of the universe be kept in view; consider what innumerable globes of the most ponderous size we have shown to exist; reflect what unspeakable myriads of all orders of beings these are capable of accommodating—and it must be seen, that here is an opportunity of dispensing happiness, worthy even of God. Has He peopled none of those globes? Has He diffused no happiness throughout their boundaries? Are the outgoings of His goodness confined to one obscure atom of His creation? To indulge such a sentiment, is as profane as it is unreasonable. It represents the all-wise and gracious Creator as deliberately making an opportunity for the exercise of one of His fairest attributes—and then deliberately neglecting that opportunity! Such an erratic course

of conduct might be charged on misguided mortals, but can have no place with Him who is "wonderful in counsel, and excellent in working."

In the next place, it will readily be allowed that *worship* is the most exalted service any created thing can render to the Creator; and the converse proposition is equally true, that the highest relation He sustains towards His creatures is that of the receiver of worship. It is so in that bright world where His presence is more immediately revealed; and it is so here, in proportion as we grow into His likeness.

But this relationship could not be sustained towards other parts of His creation if He has not peopled them. No doubt He might contemplate His glory, as it is reflected in the mighty orbs He has kindled, and He might hear, even in their silence, the music of His praise. All His works praise Him, and these especially

> "Utter forth a glorious voice,
> For ever singing as they shine,
> 'The Hand that made us is divine.'"

But what is the highest praise that can be rendered by dull, insensate matter, compared with the worship of intelligent and loyal hearts? It is hardly more than a figure of speech. "God is a Spirit, and they who worship Him must worship Him in spirit and in truth." Such intelligent and spiritual worship is most worthy of His acceptance; but it cannot be rendered by inanimate creation. It is not too much to say that the harmonious evolutions of all the spheres, are less acceptable and glorifying to Him, than the worship of one humble and earnest heart.

Now if the planets are not inhabited, they are not yielding that praise which is most glorifying to their Creator. Because, then, it would have been more glorifying to Him, and hence more worthy of Him, to have thus peopled them, it is fair to conclude that He has really done so.

This abstract proposition is confirmed, as I have said, by a closer and more practical view of the question. We have ventured to affirm, that the habitation of the planets, while more worthy of their Author, is also more in harmony with His revealed operations—that is, more consistent with analogy. Those who are not fond of abstractions, as I am not myself, may, perhaps, find here something more practical and convincing.

That one planet is certainly inhabited, is a fact which, taken by itself, constitutes but a low degree of probability that other planets are inhabited likewise. But there are other collateral circumstances, which, if fairly examined and grouped together, render the probability very high; so high, I think, as to amount to certainty.

The earth is not an isolated globe, but one, as it were, of a family, and is subject to many conditions that are common to all the rest. In the first place, all the primary planets of the solar system revolve round the sun, as the earth does. This gives them a succession of seasons, corresponding with our own. What are the uses of those seasons, if such planets are not inhabited? Is there a vernal beauty of spring—a golden glow of summer—a fading bloom of autumn—in those planetary worlds, but all unperceived and unappreciated? Or is there not more likely an intelligent and appreciative population in every one of them, on whom the Creator's power and goodness have not been lavished in vain?

Again, those planets revolve on their axes, in the same manner as the earth. We have been accustomed to think, that this motion was ordained on our behalf, to give us the grateful changes of day and night. But why do the other planets so revolve? In vain the soft shades of evening steal over those dreary landscapes, in vain the golden hues of morning light up their solitudes—if they have no inhabitants.

Further, it has been proved that some of the planets —it is believed all of them—are surrounded by an

atmosphere like our own, though differing, perhaps, in density. Now the atmosphere is useful to us chiefly in diffusing the sun's rays, in conducting sound, and in affording us the means of respiration. But why should light, or colour, or sound be distributed through the other planets, if no eye looks upon their beauties, and if no sound falls upon any listening ear?

In the next place, it must not be forgotten, that the earth does not hold any primary or important place in the creation, such as would warrant the conclusion that it is the only inhabited globe. If it were the central body in the universe, and if all other bodies revolved round it, as was once supposed, there might be some pretence for believing it to be the only inhabited sphere of them all.

But the case is widely different. So far from the earth being the central globe of the whole creation, it is not the central globe of the solar system, which we have seen to be but a very small province in the universe. Not only so, but compared with the planets of our own system, the earth holds no important place in any sense whatever.

If ours were the planet nearest to the central luminary, that would have appeared an important place, and might have argued that no other planet was equally favoured. But on this ground, Mercury and Venus would have grave reason to doubt the habitation of the earth, for they are nearer to the sun, and in that respect have a more dignified situation.

Again, if the earth were the *largest* planet, I have no doubt that circumstance would have been considered favourable to the idea that the earth only is inhabited. But the facts of the case show how false would have been such a conclusion. For an inhabitant of Jupiter, on the same ground, would conclude the earth to be a solitary waste, since his planet is more than twelve hundred times larger than ours. And the inhabitants of Saturn would draw the same conclusion, for their planet is a thousand times of greater bulk. And if the

dwellers on Herschel and Neptune can descry the earth at all, they cannot imagine such a small globe to be inhabited, since theirs are so much larger. Therefore, so far as the argument for size goes, we have less reason to doubt the habitation of all those worlds, than their inhabitants have to doubt the habitation of ours.

"Why suppose," says Chalmers, "that this little spot, little at least in the immensity that surrounds it, should be the exclusive abode of life and of intelligence? What reason to think that those mightier globes which roll in other parts of creation, and which we have discovered to be worlds in magnitude, are not also worlds in use and dignity? Why should we think that the great Architect of nature, supreme in wisdom as he is in power, would call those stately mansions into existence and leave them unoccupied? When we cast an eye over the broad sea, and look at the country on the other side, we see nothing but the blue land stretching obscurely over the distant horizon. We are too far away to perceive the richness of its scenery, or to hear the sound of its population. Why not extend this principle to the still more distant parts of the universe? What though, from this remote point of observation, we can see nothing but the naked roundness of yon planetary orbs? Are we therefore to say that they are so many vast and unpeopled solitudes; that desolation reigns in every part of the universe but ours; that the whole energy of the divine attributes is expended on one insignificant corner of these mighty works; and that to this earth alone belongs the bloom of vegetation, or the blessedness of life, or the dignity of rational and immortal existence?"

But position and magnitude are not the only elements in our idea of importance. A king's palace, without being remarkable either for situation or extent, may yet have such luxurious appointments and embellishments as proclaim it to be the residence of royalty. Perhaps the earth is thus relieved from her obscurity in other respects, by the splendour and mag-

nificence of her surroundings. That circumstance would in some degree favour the idea of her being the only abode of intelligent creatures.

But it must be confessed that the case is altogether different. In no respect, perhaps, does the earth appear so contemptible, as in her appointments and surroundings. She is attended by one small moon that periodically sheds over her a feeble and uncertain light, rendering the darkness at times only more visible. And often the dense clouds that overspread her firmament shut out entirely the light both of moon and stars. On the other hand, Neptune is accommodated with at least two moons, Jupiter has double that number, Herschel has actually six, while no less than *eight* blaze in the firmament of Saturn. Those moons, besides being so numerous, are for the most part of vast magnitudes. Our earth and moon rolled into one globe would make but a single moon suitable for Jupiter or Saturn. The immense rings of Saturn, too, must heighten the splendour of that world beyond expression. The magnificent scenic effects produced by such agencies cannot be imagined; but it is easy to see that the earth is, by comparison, a dark and dreary habitation.

And this is the spot, above all others, supposed to be chosen by the Creator, as the abode of his intelligent offspring. The very supposition has only to be stated, to be dismissed. If the argument based on the relative magnificence of the planets go for anything, we have much greater reason to conclude that Jupiter, Saturn, Herschel, and Neptune are inhabited, than the dwellers on those planets can have for believing the earth to be so. And if the planets I have named be the scenes of habitation, it will hardly be contended that all the others in our system, are not inhabited likewise. And further, if it be allowed that all the planets of the solar system are inhabited, it will be conceded, I think, that so are the planets of all other systems.

A familiar illustration may place this matter in a still clearer light. The late English-American philanthropist, Mr. George Peabody, will be held in everlasting remembrance on account of his princely munificence to the London poor. It was his ambition to provide some of the poor of the metropolis with suitable dwellings; and the Peabody Buildings are now the memorial of that laudable ambition. But now suppose that Mr. Peabody had provided for the erection of one hundred dwellings, all to be furnished and fitted up in the most approved and comfortable style, but that only *one* of these dwellings was intended to be occupied, none of the others to be used as habitations on any pretence whatever. Suppose further, that the one occupied tenement was among the smallest and meanest of the whole pile, palatial but empty mansions surrounding it on all sides,—it is easy to see that Mr. Peabody would not have earned a high reputation either for sanity or philanthropy. Still further, suppose London to be the only inhabited spot on earth, but that our eccentric philanthropist would insist on building cities of vast size and splendour throughout all the countries of the world, where they were not, and never would be required—the vagaries of such erratic benevolence would call not merely for condemnation but restraint.

Yet such is the very course pursued in creation, if the earth only be inhabited. The one hundred dwellings referred to, correspond to the one hundred globes of the solar system. The obscure, inhabited tenement is represented by the earth, while the palatial but empty splendour of the surrounding mansions, correspond to the superior size and magnificence of the larger planets. Further, the cities supposed to be scattered so purposelessly over the uninhabited globe, correspond, but in a very low degree, with the myriads of stars and their attending planets dispersed through illimitable fields of space. And this is the course of conduct which, so universally condemned in man, has been really pursued by the Creator, if the earth only be inhabited. The

absurdity is self evident; but it is greatly enhanced when it is remembered that the Creator is not only wise, like Peabody, but all-wise—and not only benevolent, like Peabody, but infinite in grace and goodness.

It may be remarked, in fine, that everywhere throughout our own world, there is a conspicuous harmony between the thinking principle and its material surroundings. *Matter* appears to exist solely for the sake of *mind*. This principle is so agreeable to our best notions of propriety, that we instinctively adopt it in all the concerns of life. All our physical arrangements are intended in some way to promote our mental enjoyment; and thus, it may be unconsciously, we always give mind the chief place. The Author of all things has clearly acted on this principle in His dealings with us, His creatures. Can we suppose that this order of things is reversed in other parts of His empire, and that matter has been created and adorned at such prodigious expense, without any reference to mind at all? The perfection and unity of the Creator, naturally incline us to the very opposite conclusion.

Now if we descend from the immense to the minute in nature, I think we shall find that analogy teaches the same lesson.

The myriads of living creatures that abound in our own world, are highly suggestive of life and enjoyment elsewhere. It would, surely, have been easy for Omnipotence to have fully arranged for man's comfort, without employing *animal life* for that purpose. Inanimate nature, by a few simple contrivances, might have been made to supply all our wants. But from the extensive scale on which the Creator has appointed *animals* to be subservient to our happiness, it would appear that He delights even in sentient existence. Not only has He clothed the plains with herds and flocks, but He has profusely scattered animal life through the atmosphere and the ocean. How can it be supposed that He who has diffused life so liberally in one part

of His creation, should reverse that order of procedure in every other part? If in walking through a forest, we plucked a leaf at random, and found it teeming with insects, we should hardly imagine that to be the only leaf in the whole forest distinguished by animal life. And so we do not, and cannot imagine that the other planets, which possibly are more numerous than the leaves of a forest, are not inhabited equally with our own.

Further, I think it is worthy of special remark, that the great majority of animals with which nature swarms, have no relation to man at all, that can be traced. Our relation to some of the more important animals is clearly understood, and is conducive very directly to our well being. But what concern have we with the countless millions of creatures that burrow in the earth—that float in the air—that are concealed in the caverns of the ocean? As Wesley very sensibly asks "What use are they of? If there be eight thousand species of insects, who is able to inform us of what use seven thousand of them are? If there are four thousand species of fishes, who can tell us of what use are more than three thousand of them? If there are six hundred sorts of birds, who can tell us of what use five hundred of those species are? If there be four hundred sorts of beasts, to what use do three hundred of them serve?" So far from perceiving the uses and relations of these animals, we have very little knowledge, comparatively, of their physical construction, or modes of life. The most that can be done is to range into classes such of them as can be sufficiently observed.

But Wesley's difficulty is very much increased when the beautiful organization of the smaller animals is taken into account. The care and skill exhibited in the construction of some of the insects is marvellous indeed, and can only be appreciated by a laborious and painstaking investigation. Those who have studied the wonders of insect life may possibly be inclined to

the opinion of Swammerdam. "After an attentive examination," says he, "of the nature and anatomy of the smallest, as well as the largest animals, I cannot help allowing the least an equal, or perhaps a superior degree of dignity." Certainly, the beauty and perfection of the lower animals do not appear to diminish in proportion as their relationship to man becomes remote and uncertain; and when that relationship disappears altogether, every fresh discovery regarding them, excites new surprise.

These facts may appear to favour the idea that the animals have been created in some sense *for their own sake*; and if that be so, it heightens the probability of the habitation of the planets. For since the Creator has seen it right to appoint animal life in our world on a scale so vast and varied, yet not primarily for our accommodation, it is more unlikely than ever that the other planets have not also witnessed the appointment of life in such forms as best accord with their circumstances.

But all the wonders of the animal creation are eclipsed by the discovery of the Infusoria, or Animalcules, or, according to Pouchet, the *Microzoa* and *Protozoa*. The existence of such creatures could never have been discovered but for the invention of the microscope. To Leuwenhoeck is generally awarded the credit of that wonderful invention. With a very rude instrument of his own design and workmanship, that acute Dutchman, who has been styled the "prince of microscopists," demonstrated animalcules to be ten thousand times smaller than a grain of sand. But his genius was far ahead of his observation, for he suspected some of these creatures to be ten *millions* times less than a grain of sand; and the more perfect instruments of our time have gone far to verify his suspicion. When magnified five hundred thousand times, they appear but as a visible point. It has been computed that a single drop of water accommodates with ease as many animalcules as there are inhabitants on our

globe! This is no mere fancy, but the result of patient, scientific observation.

These diminutive creatures have been classified into a great variety of species, and present, in fact, a greater variety of form and organization than the larger animals. In size they differ as widely as elephants differ from spiders. In organism there are all the gradations from the simplest *monad*, which possesses but the lowest form of life, up to creatures of the finest and most beautiful structure. Some of these have fifteen or twenty, and some even a hundred stomachs. They have veritable eyes, and likely possess other senses that cannot be discerned; and they have certainly blood vessels, and are endowed with a nervous system.

And their marvellous activity is almost as wonderful as their diminutive size. While all animals, and even plants, require rest, these appear to require none. Ehrenberg, who observed them at all hours of the night, found them always active, and accordingly concluded that they had neither rest nor sleep. It is well known that millions of them circulate in our blood; and Pouchet calculates that they are carried in this blood current at the rate of nine miles a day. What surprising hardihood these beings must possess, to endure the wear and tear of such an existence.

Their numbers, of course, surpass all computation and conception. Almost all vegetable matter is impregnated with them; they abound in every part of the earth; they are found in all depths of the ocean. They live *upon* and *within* perhaps every animal; thousands of them find a convenient home between our teeth; we daily receive millions of them into our stomach; myriads of them career in full tilt through our veins. All the animals of the earth, the air, and the sea, with which we are acquainted, are nothing compared with animalcules in point of numbers.

Thus we see that while the earth is small, compared with other spheres, she is large compared with

the worlds of animalcules. A plant, a leaf, or a drop of water may contain as many of these creatures as the earth contains of the human species, and may appear as large to its inhabitants as the earth does to us. The scenery exhibited in such a miniature world may be of the utmost beauty and variety, and the events in its history, so trifling to us, may be of the most absorbing interest to its inhabitants.

"I have never," says St. Pierre, "made observations of the *corolla*, simply of the smallest flower, without finding it composed of an admirable substance, half transparent, studded with brilliants, and shining in the most lively colours. The beings which live under a reflex thus enriched must have ideas very different from ours of light, and of the other phenomena of nature. A drop of dew, filtering in the capillary and transparent tubes of a plant, presents to them thousands of cascades; the same drop fixed as a wave on the extremity of one of its prickles, an ocean without a shore; evaporated into air, a vast aerial sea."

I have met with nothing on this subject more graphic than a description of a carnation by Sir John Hill. "I distended" says he, "the lower part of the flower, and placing it in a full light, could discover troops of little insects frisking with wild jollity, among the narrow pedestals that supported its leaves, and the little threads that occupied its centre. What a fragrant world for their habitation! What a perfect security from all annoyance in the dusky husk that surrounded the scene of action! Adapting a microscope to take in at one view the whole base of the flower, I gave myself an opportunity of contemplating what they were about, and this for many days together, without giving them the least disturbance. Thus I could discover their economy, their passions, and their enjoyments. Under the influence of the microscope, the base of the flower extended itself to a vast plain; the slender stems of the leaves became trunks of so many stately cedars; the threads in the middle seemed

columns of massy structure, supporting at the top their several ornaments; and the narrow spaces between were enlarged in walks, parterres, and terraces. On the polished bottoms of these, brighter than Parian marble, walked in pairs, alone, or in larger companies, the winged inhabitants. These, from little dusky flies —for such only the naked eye would have shown them—were raised to glorious, glittering animals, stained with living purple, and with a glossy gold that would have made all the labours of the loom contemptible in the comparison. I could at leisure, as they walked together, admire their elegant limbs, their velvet shoulders, and their silken wings; their backs vieing with the empyrean in its blue; and their eyes, each formed of a thousand others, out-glittering the little plains on a brilliant; above description, and too great almost for admiration. I could observe them here singling out their favourite females; courting them with the music of their buzzing wings, with little songs formed for their little organs; leading them from walk to walk around the perfumed shades, and pointing out to their taste the drop of liquid nectar just bursting from some vein within the living trunk—here were the perfumed groves, the more than mystic shades of the poets fancy realised."

Some may suppose there is a little poetic licence here, and I will not say there is not; but the wonders of animalcule existence are very much as we have represented them. It is not deduction, but actual observation, we have to do with here, The facts are, therefore, indisputable, and must be accepted by scientists and theologians alike. And no true theologian shirks or avoids them, but cheerfully accepts them and uses them to illustrate the doctrines of the Bible. "In nothing" says the Rev. William Kirby, speaking of animalcules, "is the power and wisdom of their Almighty Author more signally conspicuous. Organization so complex, and life, and spontaneous motion, and appetite, and means to satisfy it, and digestion,

and nutrition, and powers of reproduction in animals of such infinite minuteness. Who can believe it? Yet so it is, and that each of these should be varied in the different tribes and genera; that these less than the least of all the creatures that present themselves to the observation of mankind, and which till within a century or two were not suspected to exist, should outnumber beyond all statement of numbers, all the other animals together that people the whole globe; that they should be busy everywhere and perceived nowhere, till the invention of the microscope drew aside the veil between us and these entities, and we saw how God had filled all things with life, and had based the animal kingdom upon living atoms, as well as formed the earth and the world of inert ones. But to us the wondrous spectacle is seen and known only in part; for those that still escape all our methods of assisting sight, and remain members of the invisible world, may probably far exceed those that we know."

I think it would in a great measure prepare us for these or greater wonders, if we did but remember that principle to which we formerly adverted—that the Author of nature is infinite in His resources of power and wisdom. In regard to the minute as well as in regard to the immense, we may reasonably ask—

"Can man conceive beyond what God can do?"

He who cheers the solitudes of space with ten thousand suns, also works with ease and freedom in a single grain. With Him—

"An atom is an ample field,"

so that He finds no difficulty in concentrating in a very point, a large amount of life, and activity, and happiness. And as those tiny animalcules excel so wonderfully in muscular activity, it is not unlikely that they possess a corresponding quickness of perception and sensation. Thus, those diminutive creatures whose life is limited to a few days or hours, may have compressed into that short period, events and trans-

actions as numerous, and relatively as important, as those which enter into our three score years and ten.

Now, to what do these remarks tend, or what is their bearing upon the habitation of the planets? Simply this—that it is not credible that the pleasures of existence are thus diffused throughout the *minute* in creation, but that solitude and death hold universal empire over all the *immense* in the same creation. Such an idea might be entertained, if these two domains of nature acknowledged two Creators of opposite character. But one infinitely perfect Being created and ordained all. Surely, then, it is not a deduction of reason, but a wanton bound of imagination, to believe, that He who so fills a drop of water with the throbbings of life and of enjoyment, has left those mighty and myriad worlds of His creation, untenanted and desolate. Rather let us conclude, in the noble words of Chalmers, that "yon planetary orbs are so many worlds, that they teem with life, and that the mighty Being who presides in high authority over this scene of grandeur and astonishment has there planted the worshippers of His glory."

CHAPTER IX.

Summary.

THUS, I venture to think, the conclusion to which all our foregoing observations have been tending, may be regarded as established. It may be useful here to reiterate, so as to present in one view, the leading considerations by which this issue has been reached. Perhaps we have not always kept in the main track; as a traveller may sometimes diverge from the highway to admire the neighbouring scenery, all the while keeping the highway in view, and always striking into it again at a more advanced point,—so I would hope our digressions have helped to carry us forward to the main conclusion.

Having, in the first place, endeavoured to state the question with all clearness, I tried to recommend the study of such subjects, by pointing out the harmony which must exist between science and revelation, and also by referring to the example of Bible saints and of the heavenly inhabitants. I then proceeded to enquire what are the channels of information through which we may expect to learn anything as to the habitation of the planets. Having found that neither the evidence of the senses nor of testimony is of any avail here, I enquired if revelation throws any light upon the matter, and found it also silent, with the exception of some casual and indirect references on which I sought to lay no particular stress. But then it became necessary to show—what I think was clearly made out—that the teaching of scripture, and especially the Mosaic account of creation, is in no case antagonistic to the idea of planetary habitation.

No information, then, being derivable through these various channels, I considered that we were shut up to the evidence of *reason.* Having shown that mathematical demonstration is not attainable nor necessary, I tried to expound some of the laws of *probability,* showing that to be the "very guide of life," and claiming assent to the doctrine of planetary habitation, if that can be shown to be highly *probable,* because in most of the affairs of life we cannot attain to absolute certainty. The demonstration of the habitation of the planets being of this moral or probable character, I referred to science, especially the science of astronomy on the one hand, and revelation upon the other, as furnishing the data by which a safe conclusion may be arrived at.

Adopting, then, a consecutive line of thought, I stated in four simple propositions, my reasons for believing the planets to be the abodes of intelligences.

Our first proposition simply stated that all things have been made in wisdom. This was illustrated by a reference to such works of creation as can be observed, and we found that in all of these, without exception, wisdom has been conspicuously displayed. Then, by a just inference from analogy, I concluded that all the Creator's works—how vast soever or far removed from our observation—are equally distinguished by wisdom. Further, we found that doctrine confirmed by the direct testimony of scripture.

In the next place, I tried to show that wisdom, even in the Creator, is governed by certain unalterable laws; and one of these laws we found to be the adaptation of means to ends. A useless display of power is therefore never resorted to, but simply the employment of such means as will attain the intended result. We discovered the working of that principle both in the material world, and in the moral; and we found it particularly exemplified in our Lord's conduct during His life on earth. I considered, then, the conclusion to be inevitable, that the same principle must direct all the outgoings of Omnipotence, throughout

the remotest bounds of His universe; that means always harmonise with ends, and that nowhere is there any useless display of greatness.

Our third proposition affirmed, that on this principle the planets must serve some better purpose than the lighting up of the earth. A little consideration of the known facts of astronomy, together with various illustrations of them, showed conclusively that the law as to economy of display could not hold, on the supposition that the heavenly bodies were made solely or chiefly for our accommodation. Considered as a means to an end, the power displayed in their creation is out of all proportion to the end. Glancing first at the solar system, then at the comets, and eventually at the fixed stars, we found the conviction growing with overwhelming force, that the marvellous power exhibited in the creation of those bodies is not to be accounted for by their relation to the tiny speck of matter which mortals occupy. To be in harmony with the law previously established, those vast creations must fulfil some other purpose in keeping with, and worthy of their greatness.

I was thus led, in the last place, to enquire what that purpose is, for which the planets have been created; and our fourth proposition stated, that they were "made to be inhabited," because that is the purpose most worthy of their Creator, and most agreeable to the tenor of His operations. The abstract proposition that such an object is most worthy of the Creator I sought to establish, firstly, by a reference to His goodness—and secondly, by a reference to His position as the object of universal worship. Turning then to a consideration of what has actually been done within the sphere of our observation, we found that analogy confirms and illustrates the same doctrine. The analogies both of the immense and minute in nature, proclaim with a distinctness of utterance that can hardly be mistaken, that the planets are the scenes of sentient and intellectual habitation.

CHAPTER X.

Objections—Their force—Silence of Revelation—Apparent Desolation of the Moon—Supposed temperature of the Planets—Journeyings of celestial messengers—Doctrine of a particular Providence—Supposed inconsistency in the scheme of Redemption.

If the conclusion just stated has been fairly arrived at, no objection to it can have any logical force. All objections to ascertained *truth* are only the confessions of our inability to perceive that truth, and they can in no way affect its reality. The fairest palace, when viewed from a bad stand-point, will appear grotesque and ill proportioned; but when we get a commanding prospect of the whole pile, its graceful and noble symmetry is at once felt and confessed. And so truth, from being seen only in part, often presents to us dark and hideous aspects, which, however, would change with panoramic quickness into scenes of light and beauty, if we could but see the whole. It is this limited range of vision that constitutes our objections to truth; and although they have no force, abstractly considered, yet the path of truth ought to be smoothed by their removal, when it is possible to do so.

I know not what objections may be raised against the doctrine of planetary habitation. I can conceive of very few, and these few, I think, admit of a ready and easy solution.

Some may still imagine that the Bible would have contained some reference to a matter so important. I have treated of that objection already, and as I consider the answer given to it reasonable and conclusive, it need not be repeated here. I would only remark in

passing, that the Bible might as well have informed us of the races of *animalcules*. It has not done so, yet these creatures exist, and so may the inhabitants of the planets.

There is one objection derived from actual observation, which naturally claims to be next considered; I refer to the *apparent desolation of the moon.*

I remarked at an early stage that the evidence of the senses could give us no direct assistance in this enquiry. That remark may be slightly modified in favour of our own moon, for that globe is exceptional in point of distance, and presents a field for direct discovery much more favourable than any of the other planets. Our satellite is so near at hand, that her surface has been critically examined, and accurately mapped. Telescopists inform us that her valleys, rocks and mountains are plainly visible; and we are assured that if such a thing as a large city or a high tower exists there, it could not escape observation. But no such evidence of life and intelligence is to be seen; so far as actual discovery goes, our interesting attendant appears to be locked in the icy arms of death. And there are those who assert without the least equivocation that the moon is uncheered by any form of life whatever.

While I would gratefully acknowledge our obligation to those who have so carefully examined the moon's surface, I would venture to think that undue stress has sometimes been laid upon the fact that no evidence of life is actually discoverable there. It appears to be too generally assumed that life there must be similar to what it is here. But surely this is a very partial and limited view of the matter. We have no right to assume that the lunar inhabitants—if such exist—occupy themselves in building cities or towers. Even if physically constituted like ourselves, and similarly employed, are they not possibly of smaller size? What if their bulk should be in proportion to

that of the globe they inhabit? That circumstance would sensibly modify the ideas that appear to be formed of their habits and employments. But they may be differently constituted altogether; so much so as to expose nothing for our observation, though the distance were much less than it really is.

But if the moon could be demonstrated to be a silent and solitary waste, that would not invalidate our general argument. I made provision at the outset for some of the planets being possibly in a state of transition, as the earth was at least once in her history, and as she shall be at least once again. May not the moon be in this state at present? She may be desolate now, but she may have teemed with life at an earlier period; nay, she may have passed through numerous dispensations, and many more may yet write themselves upon her history. Thus her present desolation may be but a little void between one important epoch and another. For anything we can tell, she may just now be waiting to participate in the earth's expected renovation, after which both globes may be peopled by a new race, and commence together a new career.

Nor is it any objection that such a period of transition should occupy what appears to us a very long time. In the history of eternity, thousands, or even millions of years, contract into a span. Supposing the moon to be devoid of life during the whole of the earth's present dispensation, the period will yet arrive, when on looking back, such an interruption will hardly be recognised in the succession of events.

Thus, while our satellite and possibly other planets may be temporarily the scenes of silence and desolation, the interest that attaches to them is not abated, for whether we look at their past or their future, we regard them as the abodes of sentient and intellectual habitation.

Another conceivable objection is the supposed *temperature* of the planets. If the temperature of

Mercury, for instance, be high in proportion to her nearness to the sun, that planet must be in a state of fusion, so that a bar of iron would instantly be melted in her climate. In such a globe, how can habitation be possible?

It must be remembered, that the temperature is as much affected by the state of the atmosphere as by proximity to the sun. Our own climate is subject to extremes of heat and cold, produced solely by different conditions of the atmosphere. When such different effects are caused by the same atmosphere, it is easy to imagine how the atmosphere of Mercury—which may be quite different from ours—may modify the intensity of the sun's rays. It is quite possible the climate of that world may be really colder than ours, while that of Neptune, on the other hand, may be warmer.

But if Mercury were as hot as has been supposed, it would not therefore be unfit for habitation. With the Creator all things are possible. It would be quite easy for Him to adapt the organization of His creatures to any climate He might destine for their habitation. The animals of the torrid and frigid zones find the extreme heat and cold not only supportable but comfortable, because they are specially adapted to live in such climates. Such wonderful adaptations are suggestive of much greater things which may be accomplished in the same direction elsewhere. The miraculous interposition which preserved the three faithful Hebrews in the midst of the burning fiery furnace, may but represent the normal condition of things in some other worlds. And so, though Mercury were heated, not seven, but seventy times, it may still be a comfortable and enjoyable residence for the beings that have been placed upon it.

That we cannot understand how such a result could be attained, is no argument against its probability. We have the experience of one state of being only, and can have no adequate idea of the diversified modes of existence the Infinite Contriver may have

appointed. We had hardly believed it possible that an animal could live under water, if we had not seen it. When such a marvel of creative power comes under our very restricted observation, we may readily imagine how wonderful and various may be the conditions of existence throughout innumerable worlds.

Possibly another objection may be found in the vast extent of the universe, as I have tried to represent it. If heaven may be supposed to be farther distant than any of the fixed stars, how can the celestial messengers traverse such a vast distance on their errands of mercy to our world? We have seen that light requires thousands of years to travel from some of those stars; but the angel Gabriel, on the occasion of his visit to Daniel, would appear to have accomplished a longer journey in a few minutes. Is that likely or possible?

Now it ought to be observed that this objection is levelled more directly against science and revelation, than it is against the habitation of the planets. For the facts of astronomy are as I have represented them; the Bible accounts of the visits of angels are also true; if then the difficulty I have mentioned have any force, it does not affect the doctrine of planetary habitation.

It may be remarked, however, that as we cannot determine the locality of heaven, it is not fair to argue upon a mere supposition of its distance. The "land that lieth very far off" may be remote from us more in its nature than in its actual distance.

Yet if heaven is really the most distant part of creation, possibly the journey might be accomplished in a very short time. How can we, who are clogged and fettered with these gross bodies, have any idea of the motions of celestial messengers? Our ideas on this, as on most other subjects, are derived from a very limited range of comparisons. The flight of an eagle is rapid compared with the pace of a snail, but slow indeed compared with the speed of electricity. But

electricity itself is slow compared with the motion of light, and perhaps even light moves at a crawling, creeping pace compared with the swiftness of an intelligent, heavenly messenger. It was a bold conception of Milton to represent Uriel descending upon a sunbeam; yet possibly that fine imagination falls far short of the reality. I hope our former observations have brought us so closely into contact with the Creator's doings, that we must feel that our ideas of them are too poor and low, to warrant such an objection as that I am now considering.

It ought to be remembered, besides, that in the annals of eternity a few thousands of years are of small account. There are probably beings in existence, whose experience dates so far backward, that the whole history of our world appears to them but a brief and evanescent transaction. With God himself, every event in the past and in the future is as vividly present as if it were just now transpiring. It is possible, then, that some of the heavenly messengers may have been despatched on their errands to our world, before the world itself was made, and that their advent is timed exactly to the necessity they are sent to relieve. And it may be that in the interval, they administer to the inhabitants of other spheres, as timely and necessary succour as that which they bring to ourselves; or if there is no necessity to relieve elsewhere, they may associate with the happy occupants of other planets, exchange congratulations, and unite with them in their praises. All this but corresponds on a very vast scale with our driving to a railway station to meet a friend expected by a certain train, while at the same time we call upon some other friends by the way.

In other cases we can conceive that the heavenly messengers may receive such a special and speedy commission as calls for the most direct course, and taxes their utmost powers of flight. At the beginning of Daniel's supplication the commandment went forth, and Gabriel stood before the prophet ere his prayer

was ended. That journey certainly did not occupy a long time, but on that occasion Gabriel was "caused to fly swiftly." What that term *swiftly* in the vocabulary of heaven really conveys is bewildering to contemplate, and possibly astonishes some of the celestial inhabitants themselves.

These different hypotheses, it will be seen, are put forth to illustrate the one idea that we have no right to limit the resourses of the Infinite One; and any objection that rests upon such limitation cannot be sustained.

Another possible objection to the habitation of the planets, may appear in the comparative insignificance of our race, and an assumed inconsistency in the doctrine of God's particular providence. If the other planets—so vast in number, size, and magnificence—be really peopled, the inhabitants of our globe are in a new sense but as a drop in a bucket, and all the nations of the earth but as grasshoppers. But the scriptures reveal a particular providence, which extends even to the numbering the hairs of our head. Must we not rank among the more dignified of God's creatures, to receive such special attention at His hands? Would it comport at all with the majesty of His character, to regard us with such individual and special care, if we are the mean and despicable creatures implied by the habitation of other worlds?

I think this objection may be fairly answered by one simple, incontrovertible proposition, namely, that whatever is worthy of God's creation is worthy of His preservation. It is no doubt very wonderful that we are preserved; but it also is very wonderful that we were created; the one mystery is a solution of the other.

But more particularly, if a survey of the immense and magnificent in creation, be calculated to induce distrust of God's special care of us, a glance at His minute operations should dispel that scepticism. It will

then be seen, that He who controls the motions of the spheres, and directs His angels on their messages—also notices and supplies the wants of His meanest creatures. It was thus that the great Teacher himself enforced the lesson of a particular providence. "Are not five sparrows" said He, "sold for two farthings, and not one of them is forgotten before God. Fear not, therefore; ye are of more value than many sparrows."

The objection we are considering, proceeds upon a false and gratuitous assumption altogether. It assumes that God is limited as to the number of concerns to which He can give attention at the same time. Because we find ourselves incapable, generally, of attending to more than one thing at once, and that often imperfectly, we are apt to ascribe something of the same character to God, and imagine that if the greater affairs of His administration do not absorb His whole care, the less important must receive but a general and partial attention.

But His ways are not as our ways, nor His thoughts as ours. His mind is not distracted or oppressed, though an infinity of affairs simultaneously claim His regards, but upon each one of them He bestows an attention as complete and efficient, as though nothing else in the wide universe were the object of His care. Innumerable as are the worlds He has peopled, and fraught as they probably are with the most important destinies, He can and does bend upon our world, a look of as earnest and constant solicitude, as though it were the only habitation of His praise. Inconceivably more numerous as are the beings that people those worlds, He has a distinct, and particular, and unremitting appreciation of the affairs of every one of them. Not one of the more favoured merely, but every one of His intelligent creatures, may say with truth, "O Lord, thou hast searched *me*, and known me. Thou knowest my down sitting and mine up rising; thou understandest my thought afar off. Thou compassest my path, and my lying down, and art acquainted with all

my ways. Thou hast beset me behind and before, and laid Thine hand upon me." * Nay, I have no doubt that every animal—even the smallest animalcule—if it could but reason, might truthfully adopt the language of the Psalmist, "Whither shall I go from Thy Spirit? or whither shall I flee from Thy presence? Thine eyes did see my substance, yet being imperfect; and in Thy book all my members were written, which in continuance were fashioned, when as yet there was none of them. How precious also are Thy thoughts unto me, O God! how great is the sum of them! If I should count them, they are more in number than the sand; when I awake, I am still with Thee." †

What a reassuring view of the divine character is this, that He who receives the unceasing worship of archangels and seraphim, yet writes in His book the unformed members of the animalcule! Who can doubt that we who are so much superior—we who have been formed in the image of the Creator, and destined for His presence—shall still be the objects of His care?

Associated with this last objection is another that goes farther in the same direction. It may be urged, that the littleness and obscurity of our world, implied by the habitation of the planets, would not warrant or justify the interposition of the Son of God for our redemption. Christ is revealed to us as having descended from unspeakable glory, assumed our nature, and suffered in our stead. That would be wonderful enough, if we were the chief, or only race of God's intelligent creatures. If, however, we are the mean and obscure beings which the doctrine of planetary habitation would indicate, how can such costly and humiliating intervention be considered credible or possible? Would not God find such satisfaction in the perfect worship of millions of other worlds, that our feeble meed of praise might be dispensed with, and our poor apostate world allowed to lapse into forgetfulness or annihilation? Above all, if nothing short

* Ps. cxxxix. † Ps. cxxxix.

of the sacrifice of God's only Son were sufficient to reclaim our fallen race, is it credible that such humiliation and suffering would be undertaken for that end? Is it not a better solution of the mystery, to suppose that God has no offspring but ourselves, and that therefore He places upon us such high value and importance?

Now, to urge this objection is to pronounce upon a matter, concerning which we have very limited information. The scheme of redemption, considered in its entirety, is too high for us. In its immediate bearing upon ourselves, we can understand something of its scope and object; but it may have other aspects and relations beyond our conception altogether. The golden fringe of mercy has touched our world, and shed a halo of heavenly light upon our path; but those higher mysteries of mercy which "the angels desire to look unto" are not for mortal sight.

For anything we can tell, ours may be the only world that has strayed from virtue. Like the lost sheep in the wilderness, it may have been followed and found by the Great Shepherd; and He may now be bearing it home upon His shoulders, amid the acclamations of all worlds. And possibly the glorious exhibition of His character in this one transaction, may furnish the intelligences of the whole universe with such matter for praise, as shall fully justify the humiliation and suffering He undertook on our behalf.

But possibly, other worlds have lapsed as well as ours, and redeeming love may have overtaken them also. That love may have different manifestations and expressions in different worlds, or to some of them it may come only as a message; but it is conceivable, that the one stupendous sacrifice, so important to us, may be equally available and efficient in them all.

We may imagine the moral history of other worlds to be very diversified; and the praise rendered by each, may be inspired by its own peculiar experience. But our earth may have an experience all her own; and we

can imagine that all the celestial harmonies might be hushed, and the inhabitants of all worlds might pause in their adorations, to hear wafted from our distant earth, a song the like of which was never heard in the universe before,—"He loved me, and gave Himself for me." And the strange delight and joy which would then thrill the hearts of all holy intelligences, might be expressed in a loftier chorus of hallelujahs than ever before entered the ears of the Lord God of Sabbaoth.

But it is just as possible, on the other hand, that neither our history nor our worship is peculiar to ourselves. The love which we celebrate may not be exhausted on our race. Our praises of redeeming grace, may be echoed from other apostate worlds, and from them may come the refrain, in tones of surpassing melody,—"He loved *me*, and gave Himself for *me*."

These possibilities, it will be apparent, are put forward here only *as* possibilities; but the mere statement of them is sufficient to show the futility of any objection to the habitation of the planets, based on a supposed inconsistency in the scheme of redemption.

I can conceive of no other objections likely to be advanced. If those I have touched have not been answered fully, I hope they will at least be felt to be no serious obstacle to the conclusion at which we have been trying to arrive. If we had a more comprehensive view of the whole matter, I believe such objections would disappear of themselves, or rather would never rise at all.

CHAPTER XI.

Practical Inferences—The Doctrine of a Plurality of Worlds ought to be firmly Believed—It illustrates in the highest conceivable degree the Divine Greatness, Goodness, Mercy—Present and ultimate Safety of the Redeemed—Their Future Dignity and Blessedness—Atomic Theory.

I TAKE it as one evidence of human degeneracy that we love truth so little for its own sake. God is Truth itself, and in proportion as we admire his character will we be ready to embrace truth wherever we find it, and whether or not any beneficial results are seen to be associated with it.

But the doctrine of planetary habitation, which we will now speak of as an established truth, is not a mere abstract theory, but is fraught with many practical inferences to recommend it. Let me advert to a few of these, and so conclude.

In the first place, this doctrine ought to be sincerely *believed.* I would claim for it, not that all but negative assent of the understanding, but the genuine sympathetic conviction of the heart. I would claim for the planets, that we believe in their habitation in the same way that we believe China and Japan to be inhabited. When we think of those countries, it is not their geography, botany, or geology that chiefly invests them with interest—it is the fact that they are peopled by the human race. Let the circle of our sympathies be widened to embrace not only the various countries of the earth, but the planets of the solar system, and then the planets of all systems. Let us look upon those globes not merely as vast bodies of inert matter, possessing certain physical peculiarities, and subject to

certain laws—but let us regard them as the dwelling places of active and intelligent beings. Thus, we may count kindred with the habitants of innumerable worlds, and "mingle with the universe" in a loftier sense than we ever experienced before.

This view of the matter is greatly enhanced to the truly Christian mind. The sincere worshipper of Jehovah may feel that there is a spiritual bond of union between him and the dwellers in other spheres. The one "family in heaven and earth" of which he reads, thus assumes to him a new and most pleasing reality. When he lifts his eyes to the starry orbs, he thinks of them, not merely as the reflection of God's majesty, but as the temples of God's praise. He rejoices to think that the Being he worships so imperfectly may be receiving a worthier tribute of praise from other intelligences. But he is not cast down by a sense of supposed inferiority; he is only ennobled to think that the law of love and loyalty unites him and them in one holy and happy family. And when he contemplates the cold indifference or wanton rebellion toward God which so sadly distinguishes this world of ours, he thinks exultingly of the high hallelujahs that pour incessantly from other innumerable spheres. He may thus fondly hope, and reasonably believe, that the discordant notes of earth's rebellious violence scarcely produce a jar in the swell of universal harmony.

In the next place, the doctrine of a plurality of worlds forcibly illustrates several of the Divine perfections. If the heavens, as they strike our casual observation, "declare the glory of God," how greatly is the effect increased when we view those heavens in the light of modern astronomy, and perceive something of the real vastness and numbers of the starry hosts. But what an astounding influence is produced upon our minds when we consider each of the untold myriads of planets as the dwelling place of intelligent beings.

"The heavens" thus "declare the glory of God" with an eloquence we had not appreciated before.

In particular, the Divine *greatness* is wondrously magnified. The creation of *mind* is perhaps the greatest achievement we can imagine. To call into existence even one intelligent and immortal soul must be held to be a greater work than the making of the whole material fabric of the universe. How great, then, must be that Being who has created mind on so vast a scale—who has made His own eternal effulgence to be reflected in some sparks of intelligence, from every corner of creation. And if His particular providence follows—as it must—every one of the inhabitants of countless worlds, how our ideas of His power ought to be heightened and enlarged! And yet the control and superintendence of affairs of such ineffable grandeur and importance are with Him matters of the greatest ease. He holds the universe, with all its concerns, in the hollow of His hand. The words of the Psalmist thus acquire a new force and meaning, when he declares that "His greatness is unsearchable."

The doctrine of planetary habitation is perhaps not less illustrative of the Divine *goodness*. Without any diminution of His own happiness, God might have chosen to create neither mind nor matter, and might have remained in the solitary enjoyment of His own perfections. Suppose He had done so up till the present, and that now at length He should create but one individual to enjoy the pleasures of sensation and intelligence. That would certainly be regarded as a wonderful episode in the history of eternity, and it would bespeak the existence of an attribute in the Deity, which the creation of any amount of matter could never have suggested. The Divine *goodness* would now receive its first development, and call for its first tribute of praise.

But consider how very differently the case stands.

It is not one creature that has been made, nor yet a world of beings, nor ten thousand worlds, but countless myriads of worlds. And all this is for the exercise and display of the Divine goodness. Now if that goodness finds its expression in every pulse of life, reflect how great must be the sum of it.

But above all, the doctrine we have been considering, illustrates the Divine *mercy to our fallen race.* The quality and extent of that mercy is measured by the height from which it stooped, to relieve our misery. What the amount of that condescension was, let the doctrine of planetary habitation testify. He who stooped to the virgin's womb, was the same adorable One who occupied the throne of the universe. He who submitted to the scoffings and scourges of men, was none other than that Being before whom the highest intelligences of all worlds prostrate themselves in ceaseless adoration. This was the glory which He had with the Father, before the world was ; and His voluntary descent from that glory to the endurance of suffering and death at the hands of men, was the measure of His humiliation.

How this view of the matter does enhance the unfathomable meaning wrapped up in the declaration, that "God *so* loved the world that He gave His only begotten Son." How the words of the Apostle do grow in significance when he states that "He who was *rich,* for our sakes became poor." The idea of the Saviour reigning over an infinitude of worlds, and descending from that dignity to seek and save the lost, magnifies His love and mercy beyond all expression. I cannot but think, our teachers and preachers of religion might, with great efficacy, present this new attraction of the cross ; and a beam of heavenly light might thus shed a hallowed radiance on one of the highest walks of science.

Again, the doctrine of the habitation of the planets,

affords the strongest guarantee of the believer's safety. He who came to redeem us, is none other than that Omnipotent One who has created, and will ever control, all the agencies of the universe. "By Him were all things created that are in heaven, and that are in earth, visible and invisible, whether they be thrones, or dominions, or principalities, or powers; all things were created by Him, and for Him; and He is before all things; and by Him all things consist." *

Thus we see in a new light, how Christ is able to do for us "exceeding abundantly above all we can ask," and we cannot question but that He will cause all things to work together for His people's good. Rather than that one of His little ones should perish, He can easily hurl a thousand worlds back to their original chaos, or bid as many leap from the womb of nothing. To those whose feet stand upon the Rock of Ages, "the war of elements, the wreck of matter, and the crush of worlds," are fraught with no danger, and need excite no alarm.

Therefore "I will lift up mine eyes unto the hills from whence cometh my help. My help cometh from the Lord, which made heaven and earth. He will not suffer thy foot to be moved; He that keepeth thee will not slumber. Behold, He that keepeth Israel shall neither slumber nor sleep. The Lord is thy keeper; the Lord is thy shade upon thy right hand. The sun shall not smite thee by day, nor the moon by night. The Lord shall preserve thee from all evil; He shall preserve thy soul."†

In the last place, we may here learn something of the glory and dignity in reserve for the redeemed. They are represented as being closely associated with Christ, in a future state; and their happiness and dignity depend on that relationship. "Father, I will that they whom Thou has given Me, may be with Me where I

* Col. i. 16. † Ps. cxxi.

am, that they may behold My glory." We have seen something of what that glory is; we are now to observe that it is "beheld" by the saints, and reflected upon them. As the face of Moses shone, by a near approach to God upon the mount, so will it be with them, but in a much higher degree. We read that "we shall be like Him, for we shall see Him as He is." It is the seeing of Christ, that is to impress upon us His image. In proportion, then, as we exalt Him, do we exalt ourselves by anticipation. Great as the dignity is which accrues to Him as the governor of all worlds, we are represented as sharing that dignity with Him. With what new force, then, do such promises as the following fall upon the ear of faith, and quicken our languid expectation, —"To him that overcometh, will I grant to sit with me in my throne, even as I also overcame, and am sat down with my Father in His throne." And to what surpassing dignity do we rise, as we hear again the exclamation of the Apostle, "Behold, what manner of love the Father has bestowed upon us, that we should be called the sons of God."

This is, surely, a brighter aspect of things than that presented by the Atomic theory, lately revived with so much influence and learning. The supposition of the "fortuitous concourse of atoms" accounting for the present forms both of matter and mind, appears to me to be utterly opposed to the plainest laws of probability. It is the old attempt—and in no new form—to expel the Creator from His own universe.

And what prospect does that theory open up to us, that it should now be exhumed and resuscitated? Will the law of "natural selection" give any of us a chance of immortality? Will the "survival of the fittest" furnish any candidates for a future life? No. Here is the prospect of Atomism, in the words of one of its most plausible expounders. "You and I," says Tyndall, "like streaks of morning cloud, shall melt into the infinite azure of the past." The poor garb of poetry here employed does not conceal the deformity of the

gaunt spectre—annihilation. Alongside that dark and dismal prospect, I would place one glowing, sparkling promise of inspiration, and then invite both faith and philosophy to choose between them,—"Eye hath not seen, nor ear heard, neither have entered the heart of man, the things which God hath prepared for them that love him."